

**UNIVERSITY OF KWAZULU-NATAL**

**EXPLORING THE KNOWLEDGE, ATTITUDE AND  
PRACTICES OF PHC STUDENTS REGARDING  
PRECONCEPTION CARE IN A SELECTED HIGHER  
EDUCATION INSTITUTION IN ETHEKWINI DISTRICT: A  
DESCRIPTIVE STUDY**

**BY**

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Exploring the Knowledge, Attitude, and Practices of PHC Students Regarding  
Preconception Care in a Selected Higher Education Institution in eThekweni  
District: A Descriptive Study

A dissertation submitted to the School of Nursing and Public Health, College of  
Health Sciences, University of KwaZulu-Natal in fulfilment of the requirement  
for the degree of Coursework Master of Nursing (Maternal and Child Health)

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## DECLARATION

I, **Winifred Ukoha**, hereby affirm that the totality of the work contained in this thesis entitled ‘Exploring the Knowledge, Attitude, and Practices of PHC Students Regarding Preconception Care in a Selected Higher Education Institution in eThekweni District: A Descriptive Study’ is my own work. All sources consulted have been acknowledged through complete referencing. The dissertation is being submitted for the award of Master of Nursing, Maternal and Child Health at the University of KwaZulu-Natal and it has never been submitted at any other university before.

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Students’ signature

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Date

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Supervisors’ signature

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Date

## **DEDICATION**

This work is dedicated to God Almighty for his guidance and protection throughout the course of my study, to my beloved husband, Prince, for his support that has enabled me to reach this far and also to our children, Blessing, Ethan, and Josh.

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My appreciation also goes to my late father, Mr. Augustine Nnachor, who passed away on the 21<sup>st</sup> of March 2016 during the course of my study. Dad, you will forever be alive in my heart and I will uphold your legacy, which you left behind as one of the greatest teachers that ever lived.

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May God richly reward all of you.

## ABSTRACT

Sub-Saharan African countries have been the worst affected by the HIV/AIDS pandemic and high incidence of maternal and child mortality rates, more than all other continents in the world. Preventive care in nursing is the area that requires serious attention, as a lot of maternal and child morbidity and mortality can be averted through rendering a comprehensive holistic care to women of child-bearing age. The 'Draft Action Plan for the Prevention and Control of Non-Communicable Diseases 2013-2020', that was discussed at the 66<sup>th</sup> World Health Assembly in May 2013, urges governments to decrease the modifiable risk factors for non-communicable diseases and the underlying social determinants. Preconception care as part of the national policy framework is recognised as an important contributor to prevention and control of noncommunicable disease, with the aim of intervening in the early life with the ultimate goal of improving maternal and child health outcomes.

The purpose of this study was to explore and describe the knowledge, attitude, and practices of Primary Health Care students regarding preconception care in a selected institution in the eThekweni District.

A non-experimental, exploratory, descriptive, quantitative design was used for the study. The study population comprised of all the primary health care nursing students of the selected higher education institute. The total population from the three sites selected, based on their geographical location, was 163 and all the nurses were invited to participate in the study. Only 138 participated in the study, giving a response rate of 85%. A self-administered questionnaire was used to collect the data and the data was entered and subsequently analysed using the Statistical Package for Social Sciences SPSS version 24.

The findings of the study revealed that although primary health care nurses possessed high knowledge and a favourable attitude towards preconception care, they were still lacking in implementation and 71.7% had never received any training on the provision of preconception care.

Based on these findings, it is recommended that preconception care is incorporated into the curriculum of primary health care nurses.

**Key terms:** Preconception care, PHC nurses.

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## **LIST OF ABBREVIATIONS**

<b>AIDS:</b>	Acquired Immune Deficiency Syndrome
<b>BMI:</b>	Body Mass Index
<b>CDC:</b>	Center for Disease Control
<b>DVD:</b>	Digital Video Disc
<b>HEI:</b>	Higher Education Institute
<b>HIV:</b>	Human Immune Deficiency Syndrome
<b>MNCH:</b>	Maternal New-born and Child Health
<b>NCCEMD:</b>	National Committee on Confidential Inquiry into Maternal Death
<b>NDoH:</b>	National Department of Health
<b>NGO:</b>	Non-Governmental Organisation
<b>PCC:</b>	Preconception Care
<b>PHC:</b>	Primary Health Care
<b>RLP:</b>	Reproductive Life Plan
<b>SANC:</b>	South African Nursing Council
<b>SDG:</b>	Sustainable Development Goals
<b>SPSS:</b>	Statistical Package for Social Sciences
<b>STI:</b>	Sexual Transmitted Infection
<b>UNAIDS:</b>	Joint United Nations Programme on HIV and AIDS
<b>UK:</b>	United Kingdom
<b>KZN:</b>	KwaZulu-Natal



<b>UKZN:</b>	University of KwaZulu-Natal
<b>USA:</b>	United States of America
<b>UNICEF:</b>	United Nations International Children Emergency Fund
<b>WHO:</b>	World Health Organization

# **CHAPTER ONE**

## **INTRODUCTION TO THE STUDY**

### **1.1 INTRODUCTION**

Preconception care (PCC) or pre-pregnancy care according to World Health Organization (2013b) is “the provision of biomedical, behavioural and social health interventions for women and couples before conception occurs”. The aim of this care is to improve the health status of individuals by reducing behaviours and environmental elements that contribute to poor pregnancy outcomes (Lassi, Dean, Mallick and Bhutta, 2014). The World Health Organisation (WHO) reports purported that intervening after conception has occurred is usually too late in reducing risk factors might affect the mother and her unborn child (World Health Organization, 2013b).

The global child mortality rate according to UNICEF has declined by 62 percent from 1990 to 2016 with deaths of children under the age of five, decreasing from 12.7 million to 5.6 million. However, the reduction in neonatal mortality is not as rapid when compared to the under-five mortality globally (UNICEF, 2017). Maternal mortality, on the other hand, has declined by 44 percent from 386 deaths to 216/100 000 live births globally, from 1990 to 2015. This translate to an average of 2.3 percent annually and is not enough to meet the SDG 3.1 (World Health Organization, 2015).

Sub-Saharan Africa has been identified to be the area worst affected by the high rate of maternal and child mortality and morbidity rates (UNICEF, 2011). According to the report published by the WHO (2014), 289 000 maternal deaths occurred in 2013, 99% of them were from low and middle-income countries. Over two thirds (60%) of all these maternal deaths occurred in sub-Saharan Africa. On the other hand, the likelihood of a 15-year-old girl in sub-Saharan Africa dying due to complications related to childbirth is as high as one in 37, when compared to one in 3400 in developed countries. In addition, it was projected that in sub-Saharan Africa, one in 12 children die before reaching the age of five, as compared to one in 147 seen in the developed countries (UNICEF, 2011).

According to ‘the South African National Department of Health (NDoH) Annual Performance Plan 2013/2014 report’, the maternal mortality ratio stands at 310 per 100,000 live births.

However, the institutional ratio was 146.71 per 100,000 live births for the year 2012. The “10th Interim Report of the National Committee on Confidential Enquiries into Maternal Deaths (NCCEMD) in South Africa” 2010-2013, recognized non-pregnancy related infections, obstetric haemorrhage and complications of hypertension in pregnancy as the three conditions that contribute mainly to the preventable maternal deaths. The above-named conditions contribute to 66.7% of the possible and probable avoidable maternal deaths in South Africa (NCCEMD, 2014).

Even though many initiatives have been undertaken both globally and nationally to address this issue, the majority of them are not tackling the problem at the grassroots level, which is preconceptionally. In order to reach the Sustainable Development Goal (SDG) 3 as stated by Osborn, Cutter and Ullah (2015), which aims to ‘ensure healthy lives and promote well-being for all at all ages’, and target 3.1 which aims by 2030 to ‘reduce the global maternal mortality ratio to less than 70 per 100,000 live births’ a lot needs to be done. Target 3.2. also aims by 2030 ‘to end preventable deaths of newborns and children under five’. Much greater effort is needed from all the stakeholders, especially towards the preventive aspect, hence UNICEF has encouraged an acceleration of the pace of progress that targets child survival, especially in high mortality areas in sub-Saharan Africa (You, Hug, Ejdemyr and Beise, 2015).

In response to this unacceptable rate of maternal and child mortality and morbidity rate and an agreement for a continuum of care, stakeholders including WHO, UNICEF, UNFPA, PNMCH came together, advanced and proposed the intervention of preconception care services (World Health Organization, 2013b). Based on these agreements of stakeholders according to World Health Organization (2013b), a package of health interventions for contraceptive services, safe abortion care, and maternal, newborn and child health (MNCH) was also established. It was proposed that preconception care is one way of achieving the targets of decreasing maternal and child morbidity and mortality rate. As attention is now shifting from access to care to optimise the quality of care received by mothers and babies, several lifestyle modifications and medical interventions have been identified to be of advantage to the health of mothers and babies. Once all these measures are applied before conception occurs, it is believed that there will be a great improvement. The following are some of the proposed lifestyle modifications: termination of smoking, folic acid supplementation, ending or reduction of alcohol intake, diabetic control advancement and so many others (World Health Organization, 2012).

In the past ten years, the importance of preconception care services has been recognized globally. However, preconception care is not implemented in so many countries worldwide. Notwithstanding the general agreement that in order to improve pregnancy outcome, a continuum of care should be delivered from pregnancy, delivery, the postnatal period, infancy and childhood, adolescence and on to adulthood, for the achievement of an effective care (World Health Organization, 2014). PCC must address the health needs of adolescents and women before, during and after pregnancy. As a result, the care of newborns and children all through the life-cycle will be secure.

HIV and AIDS continue to be a global health problem and still affect more people in South Africa. It is reported by the WHO that about 36.7 million people are living with AIDS (UNAIDS, 2016a). From the inception of the AIDS pandemic, it is projected that 78 million people have contracted the virus and 35 million of them have died of AIDS-related illnesses as at 2015 (UNAIDS, 2016b). Universally, there were 2.1 million people that were newly infected with the virus in 2015. Furthermore, new infections among children have declined since 2010, but there has been no reduction among the adult folk. It is found that about 1.9 million adults contract HIV yearly, since 2010 (UNAIDS, 2016b).

Sub-Saharan African countries have been the area badly affected by the HIV/AIDS epidemic compared to all other countries in the world (UNAIDS, 2016a). According to UNAIDS (2016b), 36.7 million people are living with HIV universally, out of which 25.6 million are in sub-Saharan Africa. Almost one in every 20 adults are living with this virus in the region and about 66% of new HIV infections in 2015 occurred in the region. Therefore, maternal to child transmission of HIV is one area that preconception care interventions would help to reduce.

In South Africa, the current shift of health services away from hospitals to primary health care facilities sees nurses as the primary providers of services in these areas. These nurses attend to more than 85% of young girls, pregnant mothers, and their spouses. Studies have shown the significance of preconception care and the existing interventions (Dean, Imam, Lassi and Bhutta, 2013a; Eslami, Yazdanpanah, Taheripanah, Andalib, Rahimi and Nakhaee, 2013; World Health Organization, 2012). Preconception care has been proven to help prevent pre-term deliveries for all women; inhibit pregnancy in adolescent years and unintended pregnancy; optimise pre-pregnancy weight; promote healthy nutrition which includes the intake of supplements; screening, identifying and handling mental health; and intimate partner violence. It also promotes the vaccination of children and adolescents, prevents and treats

STIs, including HIV/AIDS screening; diagnoses and manages chronic disease; promotes ending of tobacco use and restricts contact to second-hand smoke (World Health Organization, 2012).

There is, however, the paucity of studies that specifically examined the midwives' and PHC nurse's knowledge, attitudes and practices (van Voorst, Plasschaert, de Jong-Potjer, Steegers and Denктаş, 2016; Heyes, Long and Mathers, 2004), which is the focus of this study. The scarcity of information on preconception care services among nurses especially in Africa is regrettable because nurses are the backbone of primary health care services.

This study, therefore, aims to contribute to the existing knowledge base by exploring and describing the knowledge, attitude, and practice of primary health care students regarding preconception care in a selected higher education institution in the eThekweni District.

## **1.2 BACKGROUND OF THE PROBLEM**

Preventive care in nursing is the area that requires serious attention as a lot of maternal and child morbidity and mortality can be averted through rendering comprehensive holistic care to reproductive-aged women (World Health Organization, 2013a). The 'Draft Action Plan for the Prevention and Control of Non-communicable Diseases 2013-2020' that was deliberated at the 66<sup>th</sup> World Health Assembly in May 2013, urges governments to decrease the amendable risk factors for non-communicable diseases and the core social determinants (World Health Organization, 2013a). Through a life-course approach, there is a chance to regulate and avoid illnesses that arise at various stages of life. As part of the national policy framework, preconception care is recognised as a significant contributor to the deterrence and regulation of non-communicable disease with the aim of intervening in the early life (World Health Organization, 2013a).

Preconception care has been recognised as one means of decreasing the maternal and child morbidity and mortality rate. In several countries, preconception health assessment only targets women with pre-defined risk factors, like diabetes, heart disease, and others. Preconception care is not regularly given to all women in the general population unless they are recognized to have risk factors (Temel, van Voorst, Jack, Denктаş and Steegers, 2014). Therefore, the lifestyle and behavioural risks such as drinking of alcohol, smoking, drug use, and folic acid supplementation are not accessed on most women who have not been identified to have any pre-existing medical conditions.

PCC helps in the optimisation of the health and knowledge women before she plans or becomes pregnant. It should be rendered by all healthcare workers who attend to women in the reproductive age group (NDoH, 2015). It is also acknowledged that a designated preconception clinic is not the norm in South Africa, hence all health workers who encounter women of reproductive age are required to encourage them to make appropriate choices and to assist those who are planning a pregnancy to optimise their health and have adequate knowledge before the pregnancy can occur (NDoH, 2015). In addition, preconception care is a hopeful, novel method of optimizing the health of unborn children by primary intervention.

The problem of obesity is very pronounced in South Africa. It is getting worse by the day, contributing to maternal and child morbidity and mortality rates. Both mothers and fathers obesity have been recognized to effect on the health of the child and contribute to other risk factors in the mother (Nielsen, Nielsen and Holm, 2015). Pre-pregnancy excess weight increases the risk of hypertensive disorders of pregnancy, preeclampsia and gestational diabetes (Dean, Imam, Lassi and Zulfiqar, 2013b).

Preconception care services are suggested by different stakeholders and studies, as a valuable tool to meet the 90 90 90 global target by ensuring that those who are negative remain negative and those who are positive have their viral load suppressed, before conception occurs, so as to decrease the likelihood of infecting the unborn child (Boelig, Coleman, Keller, Sewell and Anderson, 2015; UNAIDS, 2015; World Health Organization, 2013d).

Teenage pregnancy and child-bearing is one of the biggest contributing factors to high maternal and child morbidity and mortality rates around the world (Upadhya, Jalazo, Connor, Mistry and Cheng, 2016). Teenage pregnancy is a problem in South African society and the rendering of preconception services to all women of reproductive age has been reported as a means of reducing the incidences of both teenage and other unplanned pregnancies (Dean, Lassi, Imam and Bhutta, 2014a).

Globally, complications due to pregnancy are the primary cause of death among women between the ages of 15-19 years. Therefore, interventions to delay pregnancy among this group will subsequently reduce the maternal mortality rate. Studies conducted in the USA reveal that strategies that promote preconception health among this group are needed (Upadhya et al., 2016). It was found that preconception care should start in the adolescent

years and continue as inter-conception care to give chances for positive behavioural modifications to happen before pregnancy can occur (Dean et al., 2013a).

PHC nurses are the major health care providers of services to women of child-bearing age in Sub-Saharan Africa. Their role in the treatment and prevention of diseases has expanded with the task to improve access to medical care for everyone. South Africa in recent years has witnessed an elevated level of task shifting in the form of the primary health care approach. It is therefore essential that the PHC provider, as part of their training, should have formalised guidelines on how to render preconception care, with a clear understanding of the significant and the pathological variables they are looking at, with exceptional communication skills to relate to the women.

### **1.2.1 Overview of preconception care**

According to the WHO (2013), the aim of PCC is to optimise maternal and child health outcomes, both now and in the future. Preconception care includes those interventions given before conception occurs; those given three months before to those given three months after pregnancy has occurred; and those given between two pregnancies. Evidence has shown that lengthening the maternal, newborn and child health continuum by moving back before conception begins, can improve the well-being of mothers and partners and subsequently optimise pregnancy outcomes in both high and low-income countries (World Health Organization, 2013b).

### **1.2.2 Package of preconception care intervention**

Preconception care interventions are made up of “a package of promotive, preventive and curative health interventions” that are reported to be effective to improve the health of mothers and babies (World Health Organization, 2013d). The proposed package of effective interventions aims to tackle before pregnancy some of the health complications, lifestyle and risk factors that contribute to the chance of maternal and child mortality and morbidity. The target areas of interventions that need to be addressed, according to the World Health Organization (2013a) report, are as follows: “nutritional deficiencies and disorders; vaccine-preventable infections; tobacco use; environmental risks; genetic disorders; early pregnancies; unwanted pregnancies and pregnancies in rapid succession; sexually transmitted infections (STIs) including the human immune-deficiency virus and AIDS, infertility and subfertility;

female genital mutilation; mental health disorders including epilepsy; psychoactive substance use; and intimate partner and sexual violence”.

### **1.2.3 Goals and benefits of preconception care**

The main aim of preconception care interventions is to prevent maternal and child mortality and morbidity (World Health Organization, 2013d; World Health Organization, 2013b; Denктаş, Bonsel, Van der Weg, Voorham, Torij, De Graaf et al., 2012). For the short term with regards to health outcomes, the World Health Organization (2013d) proposes that preconception care will help in the reduction of pregnancies that are both too early and not spaced, and unintended pregnancies. Preconception care will also assist in decreasing the possibility of genetic disorders and environmental exposure, thereby improving pregnancy outcomes. This will help in the improvement of the health and welfare of women in other aspects of public health, such as diet, infertility, mental health, intimate partner and sexual violence, and substance use. In so doing, preconception care can assist in reaching the Sustainable Development Goals (SDGs) 3 and 5.

Preconception care can in the long-term help to improve the health of children as they become adolescents and adult, thereby extending the continuum of care. This will support women to make an informed and careful decisions regarding their reproduction and health (World Health Organization, 2013d). On the other hand, preconception care will also support the social and financial growth of families and societies. It may as well result in additional benefits by creating cognizance to the effects of men’s health and behaviours on pregnancy outcomes, thereby promoting male participation of the men in the health of their unborn children.

This programme offers a window for the addition of interventions such as lifestyle modifications that were not originally in the maternal, newborn and child health programmes (World Health Organization, 2013b).

### **1.2.4 Organisation of preconception care**

The World Health Organization (2013b) reveals that interventions rendered in preconception care services should not necessarily be given as a package. Therefore, the interventions that have been chosen should be constructively included in another mode of delivery that is presently being utilized to reach the target population.



For instance, folic acid supplementation should be incorporated into the contraceptive material and other services targeting women of reproductive age. Efforts should be made to build confidence and skills in women to help them resist pressure for early marriage and early sex debut through empowerment programmes for adolescent girls in school. Deliberations on intimate and sexual partner's violence and use of substances should be incorporated in health education sessions with young men and women at the workplace.

In many countries (World Health Organization (2013b) PCC is being provided in educational facilities, primary health care facilities or community centres involving partners, young people and healthcare workers in their programme which aims to educate girls and boys on this issue. This is to enable them to achieve healthier outcomes for mothers and babies, and the use of other traditional mechanisms that are encouraged. Efforts should be made in the health sector, to liaise with entities outside the health facilities such as the educational institutions, place of work churches and others.

### **1.3 PROBLEM STATEMENT**

There is a great need for preconception care services, specifically in nations with high rates of HIV/AIDS, as studies have shown that there are high fertility desires and intentions among women living with HIV (Mindry, Wagner, Lake, Smith, Linnemayr, Quinn et al., 2013; Schwartz, Mehta, Taha, Rees, Venter and Black, 2012). Preconception counseling, according to a study conducted by Schwartz (2012), has been identified in South Africa as one of the best ways of preventing both vertical and horizontal transmission among HIV positive women who want a future pregnancy. There is also increasing evidence on the effectiveness of anti-retroviral prophylaxis in the form of pre-exposure prophylaxis in the prevention of new HIV infection among a serodiscordant couple (Baeten, Donnell, Ndase, Mugo, Campbell, Wangisi et al., 2012). Preconception care requires the screening of all women of reproductive age women in order to offer them the skills to discuss the use of condoms, for them to know their status and if possible that of their partner, to enable them to take appropriate preventive measures (Dean et al., 2013a).

A study done by Dean, Lassi, Imam and Bhutta (2014c) reveals that an all-inclusive intervention can prevent first pregnancy among adolescents by up to 15% also subsequent adolescent pregnancy by 37%, and these interventions must look into the fundamental societal and communal factors, such as issues around sexual and reproductive services, contraceptive

services, and personal development programmes with the emphasis on complete education. A similar study by Stern, Larsson, Kristiansson and Tydén (2013) states that improved knowledge about reproduction may enable young women to make an informed choice about their reproductive life more easily, avoiding unintended pregnancies, preserving fertility and enhancing their preconception health.

Bortolus, et al., (2017) study mentions that the knowledge of health professional and women about preconception is low and there is confusion among health workers about who is responsible for the provision of PCC. Although many health care workers are in favour of providing PCC to the public, they still claim not to have the necessary skills required to do so (Braspenningx, Haagdorens, Blaumeiser, Jacquemyn and Mortier, 2013). Knowledge of the content of PCC guidelines is also a problem among primary health care workers as a Brazilian study reveals an awareness of the presence of a protocol but uncertainty with regard to its content (Ferreira, Akiba, Júnior, Figueiredo and Abrahão, 2015). In line with other studies, Steiner, Finocchiaro-Kessler and Dariotis (2013) argue that health care workers do not always start a discussion with their HIV positive clients about their pregnancy desires, even though there is strong evidence of high fertility desires among people living with HIV (Jose, Madi, Chowta, Ramapuram, Bhaskaran, Achappa et al., 2016).

Moreover, studies have revealed that the primary health care providers' knowledge and implementation of PCC protocols toward safer conception among HIV infected women are inadequate (Coll, Potter, Chakhtoura, Alcaide, Cook and Jones, 2016), resulting in high incidences of both horizontal and vertical transmission of HIV and underutilisation of services by women, as well as poor adherence (Hampana, 2012). The number of new HIV infections are not reducing as they should be, as many women (about 3%) are still seroconverting during pregnancy in South Africa (Dinh, Delaney, Goga, Jackson, Lombard, Woldesenbet et al., 2015). This high incidence of HIV seroconversion during pregnancy in South Africa has been mentioned to be the major cause of the failure of prevention of mother to child transmission of HIV (Kendall, Dorward, Mfeka, Gate and Claessens, 2015). Notwithstanding the level of health education and counselling being given to women, there is still an increased level of unplanned pregnancy amongst the general population and also among women living with HIV, indicative of a lack of knowledge about PCC and lack of provision of PCC by health care workers (Coll et al., 2016).

Although the PHC nurses are at the forefront of rendering preventive interventions, both in the primary health care and in the community settings, PCC is not always provided to women in the PHC setting and women find that health professionals scarcely discuss the availability and need for PCC with them (Collins, 2016). Additionally, much literature on the topic of discussion exists in developed countries, and the few studies that are found in the African context are not very specific but PCC are rather incorporated into other services (Gezahegn, 2016). Hence there is scarce literature regarding PCC in the context of Africa. Moreover, many studies on PCC around the world did not target primary health care nurses in isolation, therefore, they were studied together with other primary health care workers. Therefore, investigation of the knowledge, attitudes, and practices of PHC nurses is therefore very necessary.

#### **1.4 PURPOSE OF THE STUDY**

The purpose of this study is to explore and describe the knowledge, attitude, and practices of primary health care students regarding preconception care in a selected institution in the eThekweni District.

#### **1.5 OBJECTIVES OF THE STUDY**

In line with the research questions posed, the objectives of this study are to:

1. Explore nurses' level of knowledge regarding preconception care in selected higher education institutions.
2. Explore the nurses' attitudes towards preconception care in a selected higher education institution.
3. Describe the practices of nurses in relation to preconception care in a selected higher education institution.
4. Explore the nurses' perceived facilitators and barriers to rendering preconception care in a selected higher education institution.

#### **1.6 RESEARCH QUESTIONS**

The following research questions will guide the study:

1. What is the nurses' level of knowledge regarding preconception care in a selected higher education institution?

2. What are the nurses' attitudes towards preconception care in a selected higher education institution?
3. How are the nurses practising preconception care in a selected higher education institution?
4. What do the nurses perceive as facilitators and barriers to the rendering of preconception care in a selected higher education institution?

## **1.7 SIGNIFICANCE OF THE STUDY**

The significance of the study for nursing practice, management, education and research is described as follows:

### **1.7.1 Nursing practice**

The present study may help to enhance the quality of nursing practice by understanding the level of knowledge of the nurses, their attitudes towards preconception care and the practices in PHC. Recommendations will be made to the relevant stakeholders on strategies to improve the nurses' knowledge, attitudes, and practices of preconception care. This will assist the nurses to understand the importance of preconception care, as far as the nursing role is concerned. The researcher believes that this will ultimately help to reduce the maternal mortality and morbidity caused by unintended pregnancies among young people, unidentified risk factors, uncontrolled medical conditions and others.

### **1.7.2 Nursing management**

To the nursing management, the strategic planning and policy-making decisions should try and incorporate preconception care into the already existing PHC programme, especially the contraceptive services and school health programmes. Understanding these factors (knowledge, attitude, and practices of PHC) may also help to provide essential information for nurses' support and provide guidelines for its effective use.

### **1.7.3 Nursing education**

The findings from this study may help to improve nursing education and curriculum, especially for PHC nurses that work in the clinics and school clinics, so that they will be aware of the importance of preconception visits and try to utilize every given opportunity to render the services.

#### **1.7.4 Nursing research**

The findings from this study may open doors for further studies to be done on this topic in the South African context and in other African countries as there is scarce literature on PCC in Africa.

### **1.8 OPERATIONAL CONCEPTS**

#### **1.8.1 Knowledge**

“Knowledge is the capacity to acquire, retain and use information, which involves a mixture of comprehension, experience, discernment and skill” (Badran, 1995). In this study, knowledge refers to a comprehensive understanding of preconception care.

#### **1.8.2 Attitude**

“Attitude refers to inclinations to react in a certain situation; to see and interpret events according to certain predispositions or to organise opinions into coherent and inter-related structures” (Badran, 1995). In this study, attitudes refer to nurses’ feelings and beliefs regarding preconception care.

#### **1.8.3 Practice**

Practice is the “application of rules and knowledge that leads to the performance of the action. A good practice is an art that is linked to the progress of knowledge and technology and is executed in an ethical manner” (Badran, 1995). Practice in this study refers to the implementation or utilisation of preconception.

#### **1.8.4 Primary health care nurse**

A primary health care (PHC) nurse, is a “Professional Nurse with an additional qualification in Primary Care Nursing and is registered as such by the South African Nursing Council. This specialist provides direct care to patients with all types of illnesses and ailments, offering the first level of nursing care that patients receive. She/he is a Registered Nurse who is competent to independently render an appropriate and skilled primary care service as first-line care”(South African Nursing Council, 2014).

### **1.8.5 Higher education institution**

A higher education institution, in South Africa, means “any institution that provides higher education on a full-time, part-time or distance basis, and which is registered as a higher education institution under the higher education Act”(Department of Higher Education and Training, 2010). In this study, the higher education institution is the selected University where the study will be conducted.

### **1.8.6 Preconception care**

According to the World Health Organization (2013b) “preconception care is the provision of biomedical, behavioural and social health interventions to women and couples before conception occurs”. The aim of this care is to improve the health status of individuals by reducing lifestyle, individual and environmental factors that could affect pregnancy outcome negatively.

## **1.9 CONCEPTUAL FRAMEWORK**

The conceptual framework underpinning this study is the Precede/Proceed Model by Green and Kreuter (2005) as adapted by (Chaffee, Bridges and Boyer, 2000) when exploring the nurses’ decision to implement preventive services in the clinics. This study, therefore, uses the phase three component of the theoretical preventive service model: the Precede/Proceed Model. The model is comprised of eight phases but phase three of this model has been adapted to suit the current study. Phase three comprised of factors that influence behaviour, lifestyle and responses to the environment are explored and they include the “predisposing, enabling and reinforcing factors”.

**The predisposing factors:** According to Green and Kreuter (2005), predisposing factors are knowledge and emotional factors that contribute to whether an individual accepts or approve healthful behaviours or environmental conditions such as knowledge, attitudes, beliefs, values, and confidence.

**Enabling factors:** These are internal and external conditions that have a direct impact on the issue, which assist people to accept, embrace, reject and uphold good behaviours. They include the availability of resources, accessibility of services, community and government laws and policies, and issues associated with expertise (Green and Kreuter, 2005).

**Reinforcing factors:** According to Green and Kreuter (2005), this refers to the individual and community attitudes, which encourage or make it hard to adopt good behaviours or to foster healthy environmental situations. They are mainly the attitudes of significant people such as family, colleagues, peers, teachers, employers, decision-makers and others.

## **APPLICATION OF THE CONCEPTUAL FRAMEWORK TO THE STUDY**

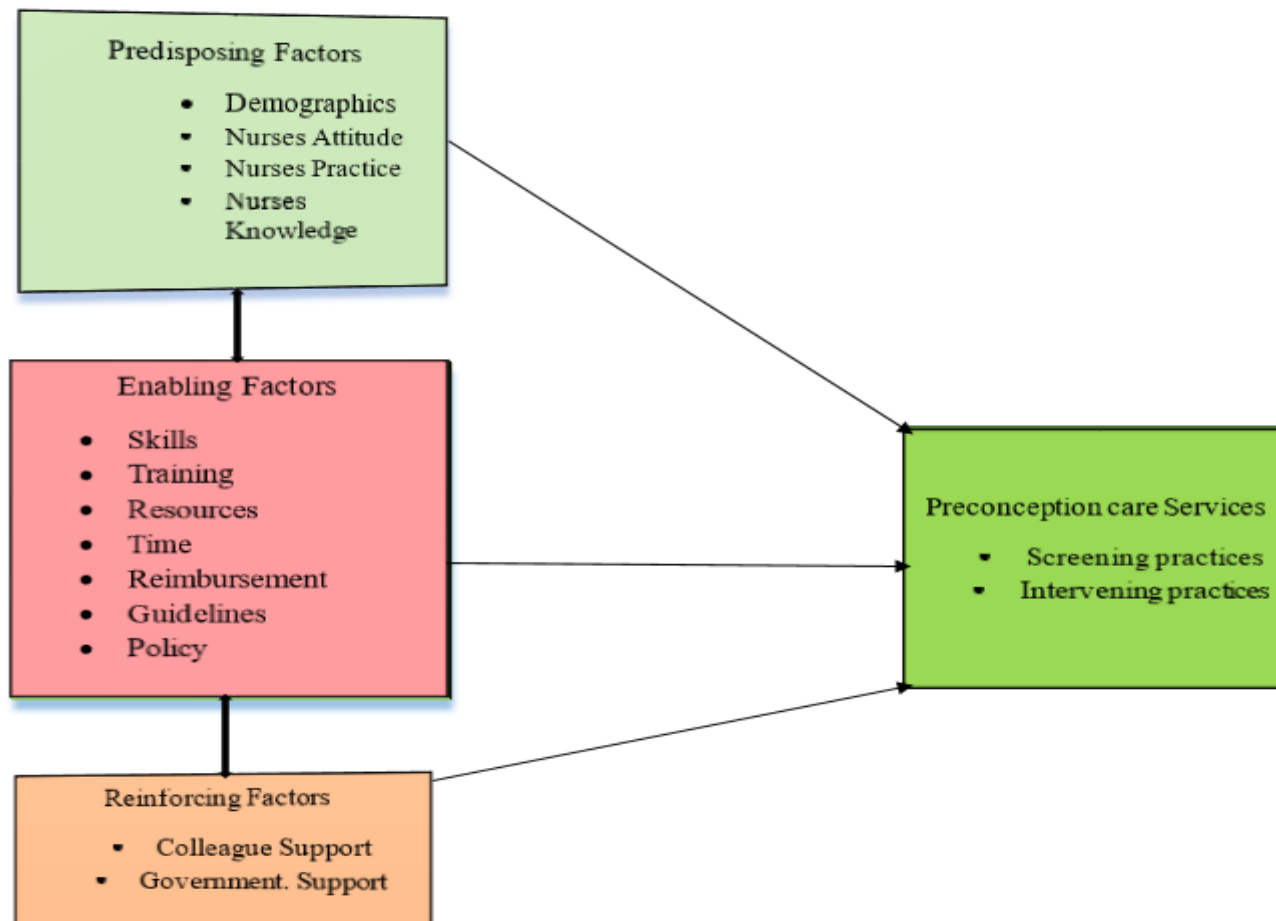
The precede/proceed model is the conceptual framework underpinning this study and the phase three of the model was adapted for this study as follows:

**Predisposing factors:** In this study, the predisposing factors as depicted in Figure 1.1, include the nurses' demographic characteristics, attitudes, beliefs, knowledge and previous practice of preconception care, which will enable them to adopt or reject the rendering of preconception care.

**Enabling factors:** The enabling factors in this study is represented in form of skills, training, resources, time, reimbursement, guidelines and policy, which determine whether the PHC nurse will render the services or not. These are the resources that if available will enable the nurse to render PCC services.

**Reinforcing factors:** The reinforcing factors in this study is in the form of a colleague, patient and government support, which will enable the nurse to render preconception care to patients.

All the above three factors lead to whether or not the actual performance of the action which is rendering of PCC will happen. In this study, this step is represented by the actual rendering of preconception care and assesses what the nurses actually practise; whether screening and intervening practices are being carried out.



The Precede-Proceed model Green and Kreuter (2005), as adapted by (Chaffee et al., 2000).

**Figure 1.1: The Precede-Proceed model as adapted**



## **1.10 OUTLINE OF THE DISSERTATION**

Chapter one covers the introduction to the study. It also covers the background of the problem, problem statement, the purpose of the study, objectives of the study, research questions, the significance of the study and operational concepts. Furthermore, the chapter highlights the conceptual framework underpinning the study.

Chapter two highlights the literature reviewed in the study which is in line with the objectives and purpose of the study.

Chapter three presents the research methodology for the study. It covers the research paradigm, approach, design, study setting, study population, sample and sampling technique, data collection instruments, validity and reliability, data collection procedure, analysis, and management. It also presents the ethical consideration and dissemination of data.

Chapter four provides a detailed description of the findings of the study which also includes the inferential analysis.

Chapter five highlights the study findings in relation to the reviewed literature. It as well presents the recommendations, limitations of the study, areas of future research and conclusions of the study.

## **1.11 SUMMARY OF THE CHAPTER**

This chapter emphasised the need for PHC nurses to render PCC interventions to individuals, especially women, irrespective of their risk profiles, in order to decrease the maternal and child mortality and morbidity rates. The purpose and objectives of the study have been highlighted, with the purpose being to explore and describe the knowledge, attitudes, and practices of Primary Health Care workers regarding preconception care in a selected institution in the eThekwin District. This is in order to make recommendations, which may inform decisions to improve clinical practice, management, education, and research. The theoretical framework that guides the study has also been presented in this chapter. The next chapter will present the literature that was reviewed on PHC nurses and preconception care.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1. INTRODUCTION**

This chapter presents reviewed literature relevant to PCC, which include the knowledge, attitudes, and practices of primary health care nurses towards preconception care. A literature review is a process which involves finding, reading, understanding and forming conclusions about published research and theory on a particular topic (Brink, Van der Walt and Van Rensburg, 2006). Polit and Beck (2012) contend that researchers never conduct a study in an intellectual vacuum; their studies are usually undertaken within the context of an existing knowledge base. The review is therefore done first to become more familiar with the knowledge base of the problem, to identify the gap based on what is already known; and to identify the research method to be used.

Academic peer-reviewed literature and technical literature were searched, using UKZN libraries, CINHALL, EBSCOhost, World catalogue, Google Scholar, PubMed, and Medline. Websites of international organisations such as the World Health Organisation, United Nations Organisations and the Centre for Disease Control were consulted. The reviewed articles range from 2006 to 2017, and the following keywords were used: pre-pregnancy care, preconception care, inter-conception, knowledge attitudes, and practices.

The literature review has been organised as follows:

- Overview of preconception care;
- Global overview of the evolution of preconception care;
- The position of preconception care in the health continuum;
- Nurses and preconception care in Africa;
- Importance of preconception care;
- The role of preconception care in HIV, teenage pregnancy and obesity reduction
- Evidence-based preconception care;

- Recommendations about preconception care;
- Nurses' and health care workers' knowledge of preconception care;
- Nurses' and health workers' attitudes towards preconception care;
- Nurses' and health care workers' practice of preconception care;
- Barriers to preconception care among nurses; and
- Facilitators of preconception care among nurses.

## **2.2. GLOBAL OVERVIEW OF PRECONCEPTION CARE**

Preconception care, according to Dean et al. (2013a) is “any intervention provided to women and couples of childbearing age, regardless of pregnancy status or desire, before pregnancy, to improve health outcomes for women, newborns, and children”. It also includes wider initiatives like the empowerment and education of women and other interventions such as immunization and micronutrient supplementation. This should commence at adolescence and continue throughout reproductive age to make room for positive behavioural changes to take place (Dean et al., 2013a). Dean et al. (2013b) furthermore define preconception care and its precincts as “any preventive, promotive or curative health care intervention provided to women of childbearing age in the period before – at least two years and between consecutive pregnancies, to improve health-related outcomes for women regardless of their pregnancy status, newborns and children up to five years of age” (Dean et al. (2013b).

On the other hand preconception care and health, according to Berglund and Lindmark (2016), is “the provision of biomedical and behavioural interventions before pregnancy, in order to optimise women’s health and subsequent pregnancy outcomes with the aim to improve not only the foetal, infant and maternal health, but also the health of the whole family and the future well-being of the offspring”. Riley, Stark, Kilpatrick and Papile (2012) sees preconception care as optimising women’s health, health behaviours, and health-related knowledge before conception can occur.

According to a Dutch national summit, an amendment was made to the definition of PCC to come up with this: “A set of interventions and/or programmes that aims to identify and enable informed decision-making to modify biomedical, behavioural and psychosocial risks to parental health and the health of their future child, through counselling, prevention and

management, emphasising those factors that must be acted on before conception and in early pregnancy, to have a maximal impact and/or choice” (Voorst, 2017).

Preconception care is also described as interventions which optimise the health women prior conception with the intent to optimize pregnancy outcomes (Dean et al., 2014a). The core aim of preconception care is to assist the woman to conceive in optimal health, in order to improve maternal and child health (Farahi and Zolotor, 2014).

Inter-conception care, in the same vein, is care rendered in between pregnancies, just as preconception care aims at improving pregnancy outcome and the health of the mother and child (Sijpkens, Steegers and Rosman, 2016). Inter-conception care is a subdivision of preconception care and comprises of interventions for mother who have experienced an adverse pregnancy earlier on (Johnson, Posner, Biermann, Cordero, Atrash, Parker et al., 2006).

Therefore, to define preconception or pre-pregnancy care, there are two crucial conditions that should be met: prevention of risk and promotion of health prior conception; with the vital aim of optimising pregnancy and health outcomes for women and children (Dean et al., 2014a). Gesualdo, Carloni, D’Ambrosio, Russo, Campagna, Pandolfi et al. (2016) argue that while delivering PCC interventions to women, the chances of preconception risk factors among men must be considered, hence the need for the focus on both.

The preconception period proposed by Dean et al. (2014a) is supposed to be not less than one to two years before the start of any unprotected sexual sex with a resultant effect of conception. Floyd, Johnson, Owens, Verbiest, Moore and Boyle (2013) suggest that to change the trend of maternal and child mortality, it is essential to improve the health of women of reproductive age before they can conceive, yet a vast majority of women do not have access to preconception care due to lack of its provision.

### **2.2.1 Rationale for PCC**

The rationale for this intervention, according to Voorst (2017) is as follows: Firstly, regular antenatal care is too late for preventive interventions, as at this time the unborn child has already been exposed to risks for adverse pregnancy outcomes. Secondly, PCC may improve the lifetime health of a person. This is because alteration during the embryonic period has the ability to affect the perinatal, child and adult life of an individual. Hence PCC provides the

opportunity to prevent these exposures. Thirdly, PCC offers some added benefits not only to the child but to the parents as well. Planning for parenthood provides an opportunity for screening, prevention, and interventions, which may lead to lifestyle modification, contributing to the optimal health of the individual.

### **2.2.2 Components and Packages PCC**

For effective preconception care to occur, there should be a wide range of preventive, therapeutic and lifestyle modifications. Bortolus, Oprandi, Morassutti, Marchetto, Filippini, Tozzi et al. (2017) and Braspenningx et al. (2013) suggest that preconception care should comprise of such domains as questions about personal and family medical history, previous infections and immunization status, personal environment, food habits, alcohol and drug use and history of congenital abnormalities. PCC should also include family planning services, chronic medical conditions and immunization services (Farahi and Zolotor, 2014). PCC comprises of three major components, which are health promotion, risk assessment, and interventions (Poels, Koster, Franx and van Stel, 2017). PCC interventions identified in a systematic review by (Lassi et al., 2014) and others will be discussed as follows:

#### **Adolescent girls completion of education and deterrence of teenage pregnancy**

This package is proposed with the aim of preventing teenage pregnancy and improving the health of young people through a wide range of counselling, education and life skills development (Reddy, Sewpaul and Jonas, 2016). This should include interventions with the goal of promoting adolescent health, avoiding adolescence pregnancies, child spacing, post-abortion fertility planning, tackling advanced maternal age and genetic counselling (Reddy et al., 2016). According to Lassi et al. (2014), this should be made available in schools, community centers, and adolescent health services, where sexually active youths are taught the risks of teenage pregnancy and made to understand condom use, as well as contraceptive methods. It was also proposed that since academic failure and teenage pregnancies are interlinked, exceptional care must be taken to guarantee that teenage girls finish high school by teaching them ways to avoid teenage pregnancies.

### **Nutritional optimisation and weight loss programmes**

Nutritional counselling should involve advice about changing risk behaviours, identifying women at increased risk and folic acid supplementation periconceptionally (Lassi et al., 2014). PCC regarding weight should comprise computing of body mass index for women of childbearing age, awareness of the risks accompanying obesity and underweight, and assisting women to formulate nutritional plans. These plans should include the eating of diverse healthy foods in suitable proportions and nutritional supplements (Lassi et al., 2014). Equally important is to maintain an optimal weight with body mass index between 18.5 and 24.9kg/m<sup>2</sup> and to maintain adequate physical activity (Nypaver, Arbour and Niederegger, 2016).

### **Multi-component youth development programmes including infection prevention**

Multicomponent youth development programmes that will be composed of social, family, peer, community, educational and health disciplines will meet the mental needs of youths and help them to become healthy, happy and productive adults. HIV/ AIDS prevention strategies should also form part of this programme, where people are encouraged before they initiate a family to know their HIV status. Various strategies can also be utilised to ensure that HIV negative people remain negative and positive individuals prevent both vertical and horizontal transmission. Perinatal screening, prevention, and treatment of other sexually transmitted infections are also necessary (Lassi et al., 2014).

### **Management of chronic diseases and family planning**

All women with chronic conditions such as hepatitis B, hypertension, asthma, diabetes, hypo or hyperthyroidism and others must be counselled regarding the risks related with their conditions in pregnancy (Nypaver et al., 2016; Lassi et al., 2014; World Health Organization, 2013b). Obese and overweight women should also be tested to diagnose pre-diabetes or type 2 diabetes. PCC for all reproductive-aged women should include screening for bipolar disorder, detecting at-risk individuals and advising women with pre-existing disorders. It should also include prevention of domestic violence. Nypaver et al. (2016) also propose that women who live in areas with an increased rate of particular illnesses such as tuberculosis, malaria, and cytomegalovirus should be screened. Family planning services should also be provided to address the unmet need for family planning and advice given to women on proper child spacing (Lassi et al., 2014; World Health Organization, 2013b).

## **Immunisation and teratogen exposure**

Women of reproductive age should be immunised against measles, mumps, rubella, varicella, hepatitis B, influenza, human papillomavirus, tetanus, diphtheria and pertussis (Nypaver et al., 2016; World Health Organization, 2013b). Teratogens are harmful environmental or drug substances that can cause foetal malformations, especially during the period of organogenesis (Nypaver et al. (2016), therefore every woman of child-bearing age should be educated and screened for exposure teratogens, which include some medications, nutritional supplements, environmental exposure, alcohol, tobacco and illegal drugs, among others.

## **Package of preconception care by WHO**

The World Health Organization (2013d) identifies 13 packages of PCC, which comprise of screening, promotive and preventive interventions to be rendered to women. They include the following: “nutritional conditions; tobacco use; genetic counselling; environmental health; infertility/ sub-fertility; interpersonal violence; too-early, unwanted and rapid successive pregnancies; sexually transmitted infections; HIV; mental health; psychoactive substance use; vaccine-preventable diseases and; female genital mutilation”.

### **2.2.3 SETTINGS FOR PCC**

#### **Primary health care settings**

The primary care setting has been demonstrated as the best place to render PCC (Hussein, Kai and Qureshi, 2016). Bronstein, Felix, Bursac, Stewart, Foushee and Klapow (2012) suggest that in other to target people who are not willing to reveal their plan to become pregnant; preconception health issues should be discussed in the school health services. Another suggestion is that health assessments should include integrated family planning services, as a way of improving delivering of preconception care among low-income women. Coffey and Shorten (2014) also advise that preconception care should be merged into usual primary care for women of child bearing age, because of increased rates of unplanned pregnancies. In this setting, PCC can be in the form of family planning, immunisation, growth monitoring and control of common disease (Lassi et al., 2014). According to Shannon, Alberg, Nacul and Pashayan (2014), PCC can be delivered in this setting in the form of universal primary care; defined “as the provision of PCC opportunistically within the context of primary health care services, such as general practice, nurse practitioner, local health care clinics and pharmacies”.

Establishment of a specialised PCC clinic which will render specific services may also be necessary (Poels et al., 2017; Shannon et al., 2014).

### **School settings**

As preconception intervention has been shown to prevent unplanned and unintended pregnancies Rahangdale, Stewart, Stewart, Badell, Levison, Ellis (2014), the school-based setting should be an important place for this (Phipps, 2016). A study in the Lebanon by Charafeddine, El Rafei, Azizi, Sinno, Alamiddine, Howson (2014), show that although utilising a school setting poses challenges, such as reaching an increased number of young people in their classroom setting due to time constraints which may hinder more detailed discussions, this setting proves effective in improving knowledge and influencing behavioural changes among youths. In this setting, PCC can be in the form of health education or part of the curriculum in life skills. College courses on preconception health area practicable balance to the present dependence on health care providers for the provision of preconception counselling (Delgado, 2013). This setting is also suggested by Goodfellow (2015) who recommends that the school curriculum is used as a major vehicle for the provision of PCC among students. It is also recommended that PCC is provided during early school years by being incorporated into educational programmes, especially in secondary schools (Kasim, Draman and Kadir, 2016).

### **Community settings**

According to Lassi et al. (2014), this can be in the form of community support groups and mass media campaigns or social marketing. This setting can also be used for high-risk population, which is defined as “the identification of women with medical and social issues, which places them at high risk during pregnancy, more so than the general population” through outreach PCC (Poels et al., 2017; Shannon et al., 2014).

### **Hospital settings**

PCC can be provided in the hospital setting in the form of hospital-based opportunistic care, which may include health education and inter-conception care, using admission into the hospital as a point of contact (Poels et al., 2017; Shannon et al., 2014; World Health Organization, 2013b).



## **Use of reproductive life plan (RLP) in PCC**

RLP which is a screening tool that enables the development of current and future reproductive plans is suggested as the content of PCC (Nypaver et al., 2016). This health-promoting tool recommended by the CDC can help women formalise contraceptive and preconception care through their lifespan and can be very useful for women with chronic diseases, youths, poor, and minority women (Coffey and Shorten, 2014). RLP offers two options which are that either a pregnancy is desired or undesired. If desired, screening for high risks is done, but if not desired, a long-acting contraception is then offered (Nypaver et al., 2016). There are six aspects of RLP: both sexes are included, responsibility, lifetime plan, communication, flexibility and personalisation and the significance of these aspects are PCC, family planning, contraception and empowerment (Stern, 2015).

A randomised, controlled trial in Sweden reveals that the provision of RLP educational resources may be feasible for promoting reproductive health among young people (Stern et al., 2013). Another result from the same setting reveals that the use of RLP in contraceptive counselling may be an achievable way of encouraging reproductive health (Stern, Bodin, Grandahl, Segeblad, Axén, Larsson et al., 2015).

As reproductive age incorporates adolescent aged 15 and above, and women up to the age of 49 (World Health Organization, 2012), it is envisaged that through the provision of preconception care interventions, first pregnancy among adolescents can be prevented by 15% and repeat pregnancy by 37% through reproductive planning and provision of contraceptives (Dean, Lassi, Imam and Bhutta, 2014b).

## **2.3. OVERVIEW OF THE EVOLUTION OF PRECONCEPTION CARE**

Preconception care is as old as humanity, in the ancient days advice are given to women to desist from harmful materials and to improve their general well-being before conception. Even in the old testament of the Bible, Judges 13: 3-4: “The angel of the Lord appeared to her and said, you are not barren and childless, but you are going to become pregnant and give birth to a son. Now see to it that you drink no wine and or other fermented drink, and that you do not eat anything unclean” (Holy Bible, 2013).

As early as the late 1980’s in the USA, professionals in maternal and child health have acknowledged the importance of PCC in improving pregnancy outcomes through health

promotion (Floyd et al., 2013). They decided to modify care given to pregnant women to comprise the period before pregnancy, basically by increasing the prenatal care concept to incorporate the period prior pregnancy (Waggoner, 2013). Studies in the USA, which include randomised trials on preconception health and counselling, show its promise as well as the challenges in implementing it, dated as far back as the early 1990's (Floyd et al., 2013). Notwithstanding the lack of robust scientific evidence, in 1995 the March of Dimes – an organisation committed to maternal and infant health, introduced 'Thinking ahead', a national campaign in the USA that tells women that healthy pregnancy lasts twelve months and stresses the importance of preconception care, healthy lifestyles and folic acid supplements (Waggoner, 2013; March of dimes, 2010).

In the 2000's, it was acknowledged that a woman's health condition and behaviour prior to pregnancy might affect the outcome of her pregnancy and the unborn baby. Therefore, the fundamental idea of PCC is to counsel women of child-bearing age regarding any bad health behaviour or conditions, that might affect their future pregnancy so that they can make decisions (Waggoner, 2013). Generally, women are advised to test for genetic predispositions and for sexually transmitted diseases; take vitamin supplements; stop smoking and alcohol; and to get control of any health conditions such as diabetes, hypertension, and obesity.

According to Floyd et al. (2013), the call was further intensified in 2002 with the fifth edition of the 'Guidelines for Perinatal Care', which includes an extended section on PCC recommending; that women should be counselled on suitable medical care and behaviour regarding every health issue they might come across during their reproductive years, in order to improve pregnancy outcomes. Four groups of interventions are suggested based on professional opinions as follows: physical assessments; risk screening; vaccinations, and counselling on behavioural changes; as well as exercise, prevention of HIV and AIDS and folic acid supplements. In the same year, a systematic review of 21 research trials on PCC was published, which supports the evidence base for numerous elements of PCC and concludes that to optimise pregnancy outcomes, maternal and child health professionals need to encourage PCC (Floyd et al., 2013).

In 2003, a review of published studies regarding preconception health was carried out by the Centres for Disease Control and Prevention (CDC). They later engaged with other organisations in a strategic planning move to set goals and strategies for improving preconception health and health care services (Floyd et al., 2013). In 2004, the Preconception

Health and Health Care Initiative was launched by the CDC, which led to increased public health interest and research in this area. This initiative has led to other headlines on promoting pregnancy thinking in the USA (Waggoner, 2013).

In June 2005, the first National Summit on PCC was held to collect evidence in this area. At the same time, the CDC assembled the panel on PCC, which led to the April 2006 Morbidity and Mortality Weekly Report publication captioned ‘Recommendations to Improve Preconception Health and Health Care – United States: A report of the CDC/ATSDR Preconception Care Workgroup and the Select Panel on Preconception Care’(Johnson et al., 2006). The panel in that publication makes ten core recommendations with key action steps, based on four extensive goals. The goals are as follows: “to improve the knowledge, attitude and behaviour of men and women regarding preconception health; to assure that all women of reproductive age in the US receive PCC services which will allow them to conceive in optimal health; to reduce risks which led to a previous adverse pregnancy by intervening in the inter-conception period, which can prevent or minimise maternal and foetal health problems, and to reduce inequalities in adverse pregnancy outcomes” (Johnson et al., 2006). In the publication, the concepts of preconception care and inter-conception care are also defined.

The CDC furthermore affianced with leaders and practitioners in other areas to enable the translation of the PCC recommendations into action and in 2006, they organised five workshops in the areas of clinical, public health, consumer, policy and finance, surveillance and research (Kent, Johnson, Curtis, Hood and Atrash, 2006). Women with private insurance plans in the US are no more charged a co-payment for preconception services or wellness-woman clinic visits since August 2012, as part of the Patient Protection and Affordable Care Act (Waggoner, 2013). Studies conducted in developed countries demonstrate how essential preconception care is in promoting the health and well-being of mothers and children. A focus group study conducted in the Netherland by Sijpkens et al. (2016) demonstrates that there are a lot of factors which act as hindrances and facilitators to successful implementations of PCC and inter-conception care.

## **2.4. THE POSITION OF PRECONCEPTION CARE IN THE HEALTH CONTINUUM**

There has recently been a global recognition of the need for the maternal, newborn, and child continuum of care. Continuum of care is essential all over the reproductive lifecycle – adolescence, pregnancy, childbirth, postnatal period and childhood and also amongst places of caregiving (Kerber, de Graft-Johnson, Bhutta, Okong, Starrs and Lawn, 2007). Apparently, a gap exists in the continuum of the life cycle for women, as various women will not be given any health care after childhood and throughout adolescence, till they are pregnant (Dean et al., 2014a; Dean et al., 2013a). The maternal, newborn and child health continuum of care approach was developed on the grounds that the health and well-being of women, neonates, and children are closely related and ought to be managed in an integrated manner (Lassi et al., 2014). Preconception care completes the continuum of care by ensuring that women start pregnancy in optimum health by guaranteeing ongoing health scrutiny and early intervention (Dean et al., 2014a).

According to Kerber et al. (2007), maternal, neonatal, and child health continuity of care necessitates access to care provided to families and community, by outpatient and outreach services and by clinical services all through the lifespan; which include adolescence, prenatal, delivery, the postnatal period and childhood. The WHO also envisages that inclusion of PCC, as well as healthy transitions, will ensure optimal health throughout the lifecycle from adolescence to adulthood (World Health Organization, 2014). For lives to be saved with this continuum of care, it should be of high coverage, quality and services and packages should be integrated all through the continuum with links between levels of care (Kerber et al., 2007). This continuum of care can be defined throughout the life cycle and over the level of care. It comprises preconception care including contraceptive services, health education and empowerment for adolescent girls and during labor, and postnatal care. Its approach also comprises levels of care such as home, level one facilities, and hospitals. The clinical care is the first approach and comprises individual oriented case management to this specific group with illness or complications usually provided at primary and referral sites. The second approach, which is the outpatient and outreach service, comprises of people-oriented services that are delivered routinely through a static clinic or mobile services. The third approach – family and community care comprise of home-based services to improve family and

community care by encouraging the uptake of healthy lifestyles and empowerment of people and community (Kerber et al., 2007).

Preconceptionally, the package to be delivered within the continuum of care should be strongly implemented and integrated. The family and community package during the adolescence and pre-pregnancy stage may include nutrition services, education and prevention of HIV and sexually transmitted infections; whereas the package for the outpatient and outreach services may include contraceptive services, elective abortions where abortion is lawful, folic acid and iron supplements and prevention and control of sexually transmitted infections and HIV. The clinical care package should include case management of sexually transmitted infections, emergency care, elective abortion where lawful and post-abortion care (Kerber et al., 2007).

## **2.5 NURSES AND PRECONCEPTION CARE IN AFRICA**

The WHO recommends that PCC in both developed and undeveloped countries is very useful in reducing maternal and child mortality and morbidity, and in optimising the health of mothers and children (World Health Organization, 2013b). It also recommends that in developed and undeveloped countries, considerations must be made as to whether the country is struggling to provide antenatal care, childbirth care, postnatal care and childcare before adding PCC. Despite the high maternal and child mortality and morbidity and comorbidity of African women with HIV, there is scarcely a standard for PCC in many African countries (Zühlke and Acquah, 2016). While some other more developed countries have dedicated PCC clinics (Boulet, Parker and Atrash (2006), some African countries have opted for the integration of preconception services into already existing health care services (NDoH, 2015).

In most Northern African countries where consanguineous marriages are customary, preconception and premarital counselling on consanguinity have been suggested to be part of the training of health care providers (Hamamy, 2012). Considering the high pregnancy desires and intentions among people living with HIV, PCC among these groups is seen as very critical (Jose et al., 2016). Recommendations and considerations to determine how to implement this PCC in both high and low-income settings have been made (Steiner, Dariotis, Anderson and Finocchiaro-Kessler, 2013). Despite all the efforts to ensure conception is made safer for people living with HIV, Matthews, Crankshaw, Giddy, Kaida, Psaros, Ware et al. (2012)

observes that people living with HIV in Durban, South Africa do not often seek nor receive preconception counselling from the health care workers in the clinic setting.

Recommendations have been made for shared responsibility among health care workers attending to women of child-bearing age; for increasing educational campaigns to raise awareness for the need of PCC and for the development of novel strategies of providing PCC amidst financial constraints in most African countries (Zühlke and Acquah, 2016).

The WHO also argues that PCC is not yet implemented widely in some developing countries, because of lack of understanding and acceptance of its aims and objectives; too much focus on saving lives; the long time lag between intervention and outcome and a lack of information on the efficiency and cost of PCC (World Health Organization, 2014). Van Der Zee, De Beaufort, Temel, De Wert, Denktas and Steegers (2011) when concluding encourages that every woman, irrespective of her risk factors, should have equal chances of receiving PCC, considering the situation of her country for her health and the health of her future generation. Not providing PCC will be the failure of both professional and governmental responsibilities. The national free preconception health examination project implemented by China is a model worth adopting by other developing countries with high maternal and child mortality rates (Zhou, Acharya, Zhang, Wang, Shen and Li, 2016).

## **2.6 IMPORTANCE AND IMPACT OF PRECONCEPTION CARE**

There has been an increasing awareness that providing care to women and partners prior pregnancy and inter-conceptionally improves the likelihood of having healthy mothers and babies (World Health Organization, 2012). An Australian case-control study by Beckmann, Widmer and Bolton (2014) reveals that expectant mothers who are given preconception care have a better chance of receiving promotive and preventive interventions, are more likely to have visited a specialist, precisely for improving their medical conditions. Authors also notice that they have a greater chance of gaining less weight till booking; they are also less likely to have premature births; hypertensive disorders, gestational diabetes, macrosomic babies and foetal abnormalities. A systematic review by Dean et al. (2014a) also reveals that there is evidence of better outcomes in areas such as smoking cessation, improvement in the use of folic acid, breastfeeding, better chances of getting prenatal care, and reduced rates of neonatal mortality in mothers that receive preconception care in either a healthcare centre or in the community.

Although there have been calls and criticisms for more concrete evidence to support reduced adverse pregnancy outcomes due to preconception interventions, evidence on the effects of several interventions is lacking (Hussein et al., 2016; Cauldwell, Steer, Johnson and Gatzoulis, 2016; Stephenson, Patel, Barrett, Howden, Copas, Ojukwu et al., 2014; Temel et al., 2014). Yet preconception intervention has proved to improve knowledge, self-efficacy, and control of health and risk behaviour (Hussein et al., 2016; Stephenson et al., 2014). Stephenson et al. (2014) alluded that three months prior pregnancy is the right time for lifestyle modifications and that women who receive PCC prior pregnancy are more likely to modify their behaviour before pregnancy, especially healthy diet, and folic acid supplementation.

## **2.7 THE ROLE OF PCC IN HIV PREVENTION, OBESITY REDUCTION AND PREVENTION OF TEENAGE OR UNPLANNED PREGNANCY**

Although PCC is for all reproductive-aged women, it is also very important for women with known risk factors (Kachoria and Oza-Frank, 2014). These risk factors include HIV and AIDS, diabetes, heart disease, obese women, and teenagers.

### **HIV and AIDS**

It is estimated that about one million births occur in South Africa yearly, 29% of which are from HIV positive women (Bekker, Black, Myer, Rees, Cooper, Mall et al., 2011). With the high incidence of HIV and AIDS in South Africa, preconception care is very important for HIV-1- serodiscordant heterosexual couples as studies have shown that antiretroviral given in the form of pre-exposure prophylaxis can help prevent the transmission of HIV-1 infection among heterosexual individuals (Baeten et al., 2012). A US study among HIV-infected couples also reveals that the majority of them, 77% are in a serodiscordant relationship and have other medical and psycho-social comorbidities, which may have a negative effect on pregnancy outcomes (Boelig et al., 2015). Having a child is part of the life plan for the majority of women, as reproduction is a fundamental human right for both HIV positive and negative individuals (Bekker et al., 2011). It is the responsibility of primary health care workers and clinicians to recognise and support the fertility desires of their HIV positive patients, both for the sake of normalizing their lives and also to ensure that pregnancy and childbirth occur with minimal risks to the mother, her partner, and the resultant child (Bekker et al., 2011). Bekker et al. (2011) also purported that in the presence of HIV infection,

preconception care should include screening and treatment of sexually transmitted infections, initiation of pre-exposure prophylaxis, the possibility of treatment failure and some other safe conception strategies. Boelig et al. (2015), in a study conducted in the USA, reveal that there are a lot of psycho-social and medical issues around HIV-infected women and HIV affected couples, which also include issues related to HIV that may lead to poor pregnancy outcomes and the risk of transmission that can be addressed by preconception care. Coupled with the fact that PCC is suitable for every woman of child-bearing age, women with HIV need all-inclusive care, which includes PCC and contraceptive care to meet their special needs.

The aim of this special care in the context of HIV is to prevent the transmission of HIV in sero-discordant partners while trying to conceive, optimise maternal and foetal outcomes, prevent mother to child transmission, improve maternal health before conception and prevent unintended pregnancy (Matthews, Milford, Kaida, Ehrlich, Ng, Greener et al., 2014; Hoyt, Storm, Aaron and Anderson, 2012). The aim of preconception counselling should not be to discourage the fertility desires in women with chronic conditions, but rather to empower them to make informed choices (Cauldwell et al., 2016).

### **Maternal obesity**

There are dire consequences posed by maternal obesity which is a fast-growing epidemic, on pregnancy outcomes (Heslehurst, 2011). According to reports, South Africa is among the most obese country in the world.

Maternal excess weight and obesity is defined as a body mass index BMI  $\geq 25.0$  to  $29.9 \text{ kg/m}^2$  and  $\geq 30 \text{ kg/m}^2$  at the first booking appointment, which increases the risk of adverse pregnancy and birth outcomes (Goodfellow, 2015; Opray, Grivell, Deussen and Dodd, 2015; World Health Organization, 2013c). There is an elevated risk of diabetes, neural tube defects, pre-term delivery, caesarean section, thromboembolic disease and hypertension in overweight or obese women and these conditions are associated with poor pregnancy outcomes (Farahi and Zolotor, 2014; Heslehurst, 2011; Johnson et al., 2006). Maternal obesity has also been linked to large for gestational age and macrosomic infants, congenital birth defects and high incidences of caesarean section (Dean et al., 2013b). According to South Africa's Saving Mothers Report 2011-2013, maternal death due to hypertension contributes to 14.8% of maternal mortality (NCCEMD, 2014). The findings of a study in the USA by Chao, Wakeel, Nazinyan and Sun (2016) also reveal that some inactivity is linked with a high chance of being



overweight or obese before pregnancy. A Dutch study among sub-fertile couples revealed that the occurrence of harmful behaviour seems to be reduced in the short term by preconception nutritional and lifestyle counselling, and thereby emphasises that the preconception period be used as a ‘window of opportunity’ to modify unhealthy lifestyles (Hammiche, Laven, van Mil, de Cock, de Vries, Lindemans et al., 2011). It is envisaged that there will be an increase in BMI in sub-Saharan Africa over the next ten years, which will increase the demand for caesarean sections in an already overburdened health care system and thus a suggestion is made for a culturally acceptable way to prevent this increase (Cresswell, Campbell, De Silva, Slaymaker and Filippi, 2016).

Moreover, Opray et al. (2015), in a Cochrane review, suggest further randomised controlled trials studies to show the relationship between preconception interventions for obese or overweight women and its influences on pregnancy outcomes.

### **Teenage and unintended pregnancy**

According to the WHO, universally, four out of ten women report that their pregnancies are unintended and perinatal mortality is greater with teenage mothers (World Health Organization, 2014). Teenage pregnancy and child-bearing contributes to the high maternal and child mortality and morbidity rate in South Africa (Reddy et al., 2016). The rate of teenage and unintended pregnancy in South Africa is very high, therefore preconception care should be for all the women in the child bearing age. In South Africa, teenage pregnancy is common with a prevalence rate of 47 births per 1000 girls aged 15-19 annually as of 2011-2013 (Reddy et al., 2016).

The WHO advised that PCC should be personalised for each woman according to her needs and stage (World Health Organization, 2013b). A systematic review by Dean et al. (2014c) reveals that comprehensive PCC in adolescents can prevent pregnancy by 15% and repeat pregnancy by 37% through the provision of highly effective contraceptives, contraceptive counselling after an abortion and promotion of reproductive planning. Upadhya et al. (2016) proposed a teen-centered reproductive planning tool to educate and provide PCC services to the youth. These and many others are all the areas where PCC will play a major role in ensuring their downward trend.

## **2.8. EVIDENCE BASE OF PRECONCEPTION CARE**

A variety of PCC interventions are currently offered to women, some with a good evidence base as opposed to others. There is wide evidence of an association between preconception risk factors and poor pregnancy outcomes, and pre-pregnancy lifestyle interventions have proven to assist in optimising pregnancy outcomes (Hussein et al., 2016; Temel et al., 2014). Smoking cessation interventions, weight control, and folic acid supplementation have been revealed to be very effective in the preconception period if carried out at the suitable time and intensity (Goodfellow, 2015). There is also good evidence of interventions to decrease drug abuse, but an absence of evidence regarding the benefits of screening in the preconception period. Evidence regarding the best way to ensure uptake of vaccines recommended during the preconception period among eligible women is lacking, even though its effectiveness is undeniable (Goodfellow, 2015).

An observational study conducted in France in 2014 among women with type 2 diabetes revealed that those whose pregnancies were planned and who attended preconception care services did not have any foetal malformations (Callec, Perdriolle-Galet, Sery, and Morel, 2014).

There is scarce evidence regarding interventions to decrease or desist from consumption of alcohol before or during pregnancy. Likewise, limited evidence reveals the benefits of screening and intervening before conception for gender-based violence. Furthermore, there is a lack of evidence on screening and interventions for mental health prior conception, except for women with a pre-existing mental health condition (Goodfellow, 2015). A systematic review by Dean et al. (2013a) shows that preconception intervention leads to a better pregnancy outcome and suggests that for a successful impact of preconception care to occur, it must begin in adolescent years, as this is a vulnerable group with high maternal and child mortality.

The need for a randomised control trial study to show the link between preconception intervention and improved pregnancy outcomes has been proposed (Opray et al., 2015). However, a study by Williams, Zapata, D'Angelo, Harrison and Morrow (2012) reveals that preconception counselling in women is linked with positive maternal behaviours, which increase the chances of improved pregnancy outcomes – healthy mother and baby. Women who received PCC prior pregnancy are more likely to modify their behaviour before

pregnancy, especially regarding healthy nutrition and folic acid supplementation (Stephenson et al., 2014). Temple (2011) demonstrates the effectiveness of PCC in improving pregnancy outcomes in diabetes and encourages greater awareness amongst couples with diabetes and health care workers in order to optimise pregnancy outcomes.

## **2.9 RECOMMENDATIONS ABOUT PRECONCEPTION CARE**

A review of preconception recommendations from “six European countries: Belgium, Denmark, Italy, the Netherlands, Sweden and the United Kingdom” shows that such recommendations are only meant for women with chronic diseases; but for healthy women and men the recommendations are fragmented and inconsistent (Shawe, Delbaere, Ekstrand, Hegaard, Larsson, Mastroiacovo et al., 2015). The WHO recommends that PCC should target both men and women, individuals and couples, whether they are contemplating pregnancy or not (World Health Organization, 2013b).

Agricola, Gonfiantini, Tozzi, Pandolfi, Carloni, Gesualdo et al. (2013) recommend that women and healthcare professionals be discouraged from using the web as a source of information on PCC, as it has been revealed that preconception information found on the web is inaccurate and poor, and unlikely to have a positive impact among the two groups. Agricola et al. (2013) suggest improvement of the web PCC information, but PCC guidelines are a better source of information than the web for both women and health care professionals. Furthermore, an Italian cohort study among women planning pregnancy reveals that a web intervention may help optimise overall health in women prior to conception and should thus be incorporated into the general PCC by professionals (Pandolfi, Gonfiantini, Gesualdo, Romano, Carloni, Mastroiacovo et al., 2014).

### **2.9.1 Recommendations by Centers for Disease Control and Prevention**

The CDC and 35 partners engaged to develop an agenda for preconception health through the development of ‘recommendations and action steps for improving the health of women, children and families’ in a summit held in 2005 (Johnson, Floyd and Humphrey, 2015; Posner, Johnson, Parker, Atrash and Biermann, 2006). The following ten recommendations were made after the review of published evidence to improve health through advances in clinical care, public health and community action by: “Individual responsibility across the lifespan; Consumer awareness; Preventive visits; Interventions for identified risks; Inter-conception care; Preconception check-up; Health insurance coverage for women with low income; Public

health programs and strategies; Research and monitoring improvements” (Johnson et al., 2015).

## **2.10 NURSES’ AND HEALTH CARE WORKERS’ KNOWLEDGE OF PRECONCEPTION CARE**

Many studies reveal that both women of child-bearing age and health care professionals attending to them demonstrate low levels of knowledge and behaviour associated with PCC. A cross-sectional study conducted in Ethiopia indicated that 36.6% of reproductive-aged women have low knowledge of PCC (Gezahegn, 2016). This is also an indication of the level of promotion given to this concept by health care workers.

Bortolus et al. (2017) focus group study in Italy reveals that there is a lack of awareness of preconception health and care among nurses and other health care workers and this contributes to barriers to rendering preconception care. The systematic review of studies in Western countries by Braspenningx et al. (2013) shows that although health care workers are in favour of rendering preconception care to the public, they still claim not to have the skills to do so.

Although a Jordanian study by Al-Akour, Sou’Ub, Mohammad and Zayed (2015) among men and women reveals that their awareness of preconception care is moderate, as they are aware of the effect parents’ health can have on that of the child, yet general practitioners’ knowledge and awareness of preconception guidelines is limited. Rather than using guidelines, health care workers depend on the knowledge acquired from clinical skills, training and from patient information sources (Ojukwu, Patel, Stephenson, Howden and Shawe, 2016). A study in the USA, however, demonstrates that the knowledge of health care providers with regards to folic acid supplementations is high, even though most of them do not recognise that a large number of pregnancies in that country are unplanned, thereby preventing them from recommending it to all women of child-bearing age (Williams, Abelman, Fassett, Stone, Petrini, Damus et al., 2006). A study in Brazil among primary health care workers comprising of doctors and nurses, assessing their knowledge of preconception care in preventing congenital abnormalities, shows that although they recognise the presence of a protocol that supports its practice, they are still not sure of the content of the protocol (Ferreira et al., 2015). A study of primary care providers’ attitudes, knowledge, and practices regarding PCC, safer conception and pregnancy among HIV infected women in the USA shows that their knowledge and implementation of PCC protocols are inadequate (Coll et al., 2016). An Iranian cross-sectional

study among midwives revealed that their knowledge and attitude score was good and knowledge, age, employment status and job responsibilities were predictors of practice, while age, level of education, employment status and years of service were predictors of knowledge (Sattarzadeh, Farshbaf-Khalili and Khari, 2017).

### **2.10.1 Who Should Render Preconception Care?**

There are doubts about whose responsibility it is to offer preconception care (Bortolus et al., 2017; van Voorst et al., 2016; Stephenson et al., 2014). Coffey and Shorten (2014) argue that clinical nurses are best suited to integrate aspects of preconception care into their routine patients' care, according to their views, emphasis was placed on holistic care and patient education. Advanced practice nurse is suitable to combine aspects of preconception care into the routine care which are provided to patients. DiPietro Mager (2016) suggests that clinical pharmacists are well positioned to render preconception services through collaborative approaches with other health care teams, in a bid to fulfil the unmet need for preconception care. Such services such as education, counselling, contraceptive services, medication and management of chronic illnesses, immunisations, screening, health promotion and substance use can be combined into everyday pharmacy practice.

A study by vanVoorst (2016) shows that general practitioners differ in their opinion about whose responsibility it is to render preconception consultations, while midwives, on the other hand, perceive themselves as the ones responsible for providing preconception consultation. Young, Urquia and Ray (2013) suggest that PCC in low and middle-income countries be rendered by a female skilled birth attendant who is trusted and easily accessible to prospective mothers. Most general practitioners believe that PCC could be delivered by nurses, who could deliver the information during contraceptive consultations, during cervical screening, postnatal reviews or during school services with the adolescents (Ojukwu et al., 2016). General practice, on the other hand, is seen as the most suitable setting for PCC as general practitioners see more women of child-bearing age than the midwives, as the former basically see women after conception; yet the midwives are seen to be more willing to provide PCC (Poels et al., 2017).

However, a Belgian cross-sectional study among reproductive-aged women shows that the majority of them (93%) choose to obtain their PCC services from a gynaecologist as opposed

to 73% that prefer the midwife (Goossens, Delbaere, Dhaenens, Willems, Van Hecke, Verhaeghe et al., 2016).

## **2.11 NURSES' AND HEALTH CARE WORKERS' ATTITUDES AND PERCEPTIONS TOWARDS PCC**

Studies show that generally, nurses and health care workers have a positive attitude towards PCC, but they lack its implementation (Klein, Boyle, Kirkham, Connors, Whitbread, Oats et al., 2017; van Voorst et al., 2016). A study by van Voorst et al. (2016) in the Netherlands shows that most of the primary caregivers had a positive attitude towards PCC, even though they were not rendering the services as expected. An Australian study on the provision of PCC to women with diabetes shows that there is a willingness and potential among health care practitioners for the provision of PCC, especially in rural settings and they adhered to the recommended lifestyle modifications (Klein et al., 2017). Female health care workers were shown to have a good attitude towards cervical cancer screening, but fail to implement it in practice (Alali, Salem, Elmahdi, Alkubaisi, Alwahedi, Taher et al., 2016).

Counselling about safer conception is part of preconception care to be given to reproductive age women living with HIV. A study among health care providers in South Africa shows that they generally have a positive attitude regarding the wish of HIV-affected partners to get pregnant and were also knowledgeable about safer conception methods (West, Schwartz, Phofa, Yende, Bassett, Sanne et al., 2016).

A study in the Netherlands among primary caregivers – midwives and general practitioners, revealed that their perceptions towards preconception consultations were moderately positive although they were underserving potential parents regarding PCC consultations (van Voorst et al., 2016).

## **2.12 NURSES' AND HEALTH CARE WORKERS' PRACTICE OF PCC**

While PCC has been recommended for several years, most women do not ask for it and most health care professionals do not render the services in many countries. Studies have shown that women of child bearing age are interested in PCC and would desire that it comes from professional caregivers, especially gynaecologists, midwives and general practitioners (Goossens et al., 2016).

Studies have also shown that the implementation of preconception care is low among nurses and other health professionals. A study in the Netherlands among primary caregivers revealed that very few of them recommended PCC consultations, although they gave information to prospective parents on preconception risk factors (van Voorst et al., 2016). It also shows that only a small percentage of general practitioners and midwives had rendered preconception consultations two months prior to the study. Although practices of health care providers regarding general PCC may be low, a study in the USA by Williams et al. (2006) shows that their practices of supplementary folic acids were high. Another study among primary care providers in the USA regarding PCC shows that their practices of PCC among HIV infected women were inconsistent and not according to standard, as most of them did not know if there was a protocol of care (Coll et al., 2016). Although health care workers know the importance of PCC in improving the preconception health of pregnant women, yet they fail to incorporate PCC into their practices and there is still confusion on whose role it is to provide PCC (Chuang, Hwang, McCall-Hosenfeld, Rosenwasser, Hillemeier and Weisman, 2012).

## **2.13 BARRIERS TO UPTAKE AND RENDERING OF PRECONCEPTION CARE**

Barriers to proper rendering and uptake of preconception care were identified in both patients and health care workers.

### **Resource constraints**

Literature indicates resource-constraints as a barrier to uptake and rendering of PCC. A research conducted at Monash University in Australia, among general practitioners, found that the major barrier to the provision and uptake of preconception care were primarily due to lack of resources for both patient and practitioners. Resources such as patient information sheets and evidence-based websites for PCC were not available from credible organisations for utilization, therefore practitioners stated that they require resources from a more reliable source (Mazza, Chapman and Michie, 2013).

### **Limited awareness or evidence of benefits of PCC**

There has been inadequate awareness of the benefits of PCC both among the patients and health care providers. Bortolus et al. (2017) mentioned some of the barriers to uptake and rendering of preconception care as due to lack of cognizance with the concept and lack of promotion of preconception care in the form of guidelines. There is also limited awareness

about the benefits of preconception care on the part of the majority of parents-to-be and reluctance of general practitioners for the need of preconception care (M'hamdi, van Voorst, Pinxten, Hilhorst and Steegers, 2017). Barriers to uptake and rendering of inter-conception care as demonstrated by Sijpkens et al. (2016); Ojukwu et al. (2016) are unfamiliarity to PCC both on the part of the health care provider and on the part of the parents.

### **Inadequate management and organisation of preconception care services:**

M'hamdi et al. (2017) also cited non-existence of a comprehensive preconception care programme and other barriers such as inadequate management and organisation of preconception care; and differing views on the part of health professionals on pregnancy, patient's reproductive independence and the obligation of health professionals. Sijpkens et al. (2016) included lack of agreement on how to organize and reimburse for the services as barriers to uptake and rendering of inter-conception care. Poels et al. (2017) also mentioned providing and organizing PCC as a barrier in relation to the unclear role definition of who should provide the services.

### **Time**

In a study conducted among general practitioners in Australia by Mazza et al. (2013), time was cited as a constraint, likewise the presence of other competing preventive priorities at the general practice settings which consumes most of the time. They also pointed out that they have a time limit for their consultations (Mazza et al., 2013). This also was the case among general practitioners in a study by Ojukwu et al. (2016) and Chuang et al. (2012), as they were concerned that PCC will increase their consultation times which were already limited to a few minutes per appointment.

### **Lack of skills and training**

Barriers to uptake and rendering of inter-conception care as demonstrated by Sijpkens et al. (2016) include lack of skills for health care professionals. Limited knowledge in the form of lack of provider understanding of preconception issues and lack of resources regarding PCC for HIV infected women were cited as a barrier in a study by Coll et al. (2016) among primary care workers. Only a few health care professionals received some form of education and training on PCC and this, as well as a lack of conviction on the effectiveness and benefits of PCC provision, emerged as another barrier (Poels et al., 2017). Delvoye, Guillaume, Collard,



Nardella, Hannecart and Mauroy (2009) suggested that PCC should be incorporated into the curriculum of nursing and medical schools for it to be effectively implemented.

### **Most pregnancies are unplanned**

While the provision of PCC by health care workers has been linked with a decrease in the number of ambivalent pregnancies among people living with HIV by Rahangdale et al. (2014), yet many pregnancies around the world remain unplanned. Mazza et al. (2013) reported that most women do not present to the clinic during the preconception period. General practitioners also acknowledged unplanned pregnancies or small inter-pregnancy intervals as barriers to the rendering of PCC, as there is usually lack of time to improve health prior to pregnancy (Ojukwu et al., 2016; Goodfellow, 2015). Failure to address fertility wishes by health care workers and a great percentage of unplanned pregnancies among HIV infected women were reported as a barrier to women planning their pregnancy and utilizing PCC services (Coll et al., 2016). A study in Australia on preconception care of women with type 2 diabetes mellitus shows that most unplanned pregnancies were among women with the feeling that their pregnancy was discouraged than with those who were comforted that they could have a healthy baby with proper care (Klein et al., 2017).

On the contrary, a study in the United Kingdom Stephenson et al. (2014) shows a high level of pregnancy planning among women, thereby showing that PCC can still achieve its set goals in some women.

### **Non-disclosure of HIV status and lack of guidelines**

So many people living with HIV have not revealed their status to their partners and do not know their partners' status and this is constituting barriers to rendering preconception counselling to this group (Matthews et al., 2012). Notwithstanding the existence of safer conception guidelines in South Africa, at the clinic, its inaccessibility and its lack of addition in the training, monitoring, and reporting leads to the deficiency in implementation in the care of HIV positive women (West et al., 2016). Other barriers identified, with regards to the provision of preconception counselling by health care providers among people living with HIV, were concerns over readiness for pregnancy, perception about what patients will do with the knowledge of safer conception, doubt about HIV serodiscordance and inadequate safer conception information (West et al., 2016).

## **2.14 FACILITATORS TO UPTAKE AND RENDERING PRECONCEPTION CARE**

As facilitators and barriers to uptake of preconception care goes hand in hand Poels, Koster, Boeije, Franx and van Stel, (2016) identified six factors that might facilitate or hinder uptake of preconception care amongst patients as follows: “preconditions; emotions and beliefs; perceived need; experience; social structure; accessibility and provider characteristics”.

### **Availability of preconception checklist**

Mazza et al. (2013) in a study among general practitioners cited the accessibility of preconception checklists, patient brochures, hand-outs and waiting room posters outlining the advantages of preconception care as perceived enablers to the rendering of preconception care. An Iranian study, after observing the level of weakness of the preconception counselling, suggested that health policy makers should establish a preconception counselling and surveillance system to ensure the promotion of preconception counselling (Eslami et al., 2013).

### **Reimbursement**

According to Poels et al. (2017), compensation options are not available at present, therefore, rendering PCC services is not rewarding without payment and a compensation option through a third party was suggested as a solution, which will act as a facilitator to the provision of PCC.

### **Education and training**

Only a few health care professionals received some form of education and training on PCC, therefore, a suggestion was made regarding investing in education and organizing refresher courses for the improvement of the knowledge and awareness of health care providers regarding PCC to act as a facilitator (Poels et al., 2017).

### **Promotion**

Since PCC is poorly promoted, suggestions were made to increase uptake rates by the routine opportunistic offer of PCC and by the launch of a promotional campaign (Bortolus et al., 2017; Poels et al., 2017). This campaign will reach the target group in the form of an advertisement in newspaper, magazines and Television commercials and to gain publicity

through social media and will raise awareness through outreach activities in communities and districts by employing volunteers and important figures (Poels et al., 2017).

### **Resources and time**

Since barriers and facilitators go hand in hand, lack of time, staff and resources emerged as a major theme in barriers to rendering PCC. Poels et al. (2017) found that because the provision of PCC is expected to be time-consuming, this restricts the likelihood of its integration into regular consultations.

Availability of resources was another evident facilitator of PCC as providers lack tools and guidelines for PCC provision and these resources are seen as very useful and time-saving when preparing for the provision of PCC (Poels et al., 2017). Resources such as an Educational DVD was found to be an effective, relevant and highly valued resource for women with diabetes and therefore was recommended for future educational programmes (Spence, Harper, McCance, Alderdice, McKinley, Hughes et al., 2013).

## **2.15 SUMMARY OF THE CHAPTER**

This chapter emphasises the knowledge base of preconception care. The literature review focuses on preconception care in Africa and globally, nurses and preconception care, nurses' practice, knowledge and attitudes towards preconception care and the facilitators and barriers to the provision of PCC. Literature on PHC nurse practice, knowledge and attitude towards PCC is limited, thus substantiating the need for the present study. Most studies used for this study were for the entire primary health care provider which comprises of clinical nurses, general practitioners, and others.

The studies reviewed were of different research designs, ranging from descriptive surveys, systematic reviews to experimental studies. The demographic variables of the respondents were comparable across studies. Although diverse instruments were used in different studies, the studies, in general, indicated that the respondents had positive attitudes towards PCC, but low knowledge and practices were documented in some studies. The facilitators and barriers have been consistent in different studies. The next chapter will present the research methodology for the study.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1. INTRODUCTION**

The methodology is the procedure used to structure a study so as to collect and analyse data in an orderly method (Polit and Beck, 2012). This chapter presents the methodology, it focuses on the research paradigm, research approach, research design, study setting, study population, data collection, data management, data collection process, data analysis, validity and reliability, ethical consideration and dissemination of findings.

#### **3.2. RESEARCH PARADIGM**

A paradigm is a world view, a general perspective on the complexities of the world through a lens (Polit and Beck, 2012). The researcher adopted a positivist paradigm in this study. According to Polit and Beck (2012), a positivist paradigm is of a fundamental assumption that there is a reality out there that can be studied and known. The positivist scientific approach uses an orderly, disciplined procedure with tight control over the research situation to test researchers' guesses about the nature of the phenomenon being studied and the relationships among them. A study in a positivist paradigm gathers evidence according to an established plan, using the structured instrument to collect information which supports the study in the form of a questionnaire to collect data (Polit and Beck, 2012). The positivists value objectivity and attempt to hold personal beliefs and biases check, this leads the researcher to adopt this approach to guide in this study. Positivists hold the view that truth is absolute and that there is a single reality that can be defined by careful measurement (Burns and Grove, 2011). To find the truth, the researcher must be completely objective and therefore values, feelings, and personal perceptions cannot enter into the measurement (Burns and Grove, 2011).

The ontological assumption (nature of reality) underlying the positivists paradigm is that an objective reality exists independent of human observation (Polit and Beck, 2012). It is on this nature of reality that the study sought to explore the knowledge, attitude, and practice of PHC students regarding PCC. The epistemological assumption (nature of knowledge) of the paradigm is that the inquirer is independent of what is being investigated and does not affect the findings of the study (Polit and Beck, 2012). In line with the epistemological assumptions,

data was collected using a questionnaire and therefore the researcher has no influence on the study findings.

### **3.3 RESEARCH APPROACH**

The study used a quantitative approach which is also known as the structured approach, to the inquiry. In this approach, everything that forms the research process that is, objectives, design, sample, and the questions that you plan to ask of respondents, is predetermined (Polit and Beck, 2012). The researcher based the choice of this approach on the assumption that collecting this assorted data would provide a better understanding of the research problem (Creswell, 2013).

It is more appropriate to determine the extent of a problem, issue or phenomenon by quantifying the variation. For example: when you are measuring the number of people with a particular problem or with a particular attitude towards something.

### **3.4. RESEARCH DESIGN**

In this study, the non-experimental descriptive explorative design was used. It was found to be most suitable for this study because, in non-experimental design, the purpose is to examine the situation as it exists without manipulations (Burns and Grove, 2011). The non-experimental design was chosen because the researcher does not plan to develop any intervention or framework for this study as it was not part of the scope of this project. Hence, the reason for this design.

A descriptive research involves the exploration and description of phenomena under study as it is in real-life situations. It provides an accurate account of the characteristics of individuals, situations, or groups and is usually conducted with large numbers of subjects (Burns and Grove, 2011). Descriptive studies examine variables in natural environments and there are no treatments provided (Burns and Grove, 2011). This design is used when little is known about the phenomenon. Through descriptive studies, researchers discover new meaning, describe what is known, determine the frequency with which something occurs, and categorize the information.

Literature shows that little is known about preconception care in the context of South Africa which is the research setting. The researcher aims to determine what the primary health care

nurses know about preconception, and how they render these services. Thus, the reason for this study and the investigation carried out. Furthermore, the target population for this study was the post-basic primary health care nursing students. The respondents were accessed in their classrooms (natural settings) for the distribution of the questionnaires.

### **3.5. STUDY SETTING**

The research setting for this study was a Higher Education Institution in KZN. This Higher Education Institution (HEI) uses two modes of teaching; a centralized mode and a decentralized mode of delivery. This study targets a programme that uses a decentralized mode of teaching in Primary Health Care PHC. This Primary Health Care programme is offered at the following different sites in KZN: Port Shepstone, Durban, Newcastle, Ladysmith, Pietermaritzburg, and Empangeni.

For the purpose of this study, three sites under the patronage of the selected HEI were considered, namely Durban, Pietermaritzburg, and Empangeni. These three settings were selected based on their geographical location (urban, semi-urban and rural), and accessibility. This study setting is also deemed appropriate because of the availability of respondents, which will enhance successful data collection considering the limited time available for this study.

### **3.6. STUDY POPULATION**

Population according to Burns and Grove (2011) is a total number of the individuals, elements, items, or materials that meet the criteria for inclusion in a study and are the focus of the research. Therefore, population refers to the entire aggregate or group that the researcher is interested in (Polit and Beck, 2012). The population is further divided into two categories: target population and accessible population. The target population is the entire set of individuals or elements who meet the sampling criteria, while the accessible population is the portion of the target population to which the researcher has reasonable access (Burns and Grove, 2011).

The programme has a total of 278 decentralised PHC nursing students which is the target population, but the accessible population from the three selected sites is 163: Pietermaritzburg Centre site had 40; Durban Centre site had 68 and the Empangeni site had 50. Therefore, the population for this study were all the post-basic decentralised primary health care nursing students from the three selected sites, which were 163.

This study explored the knowledge, attitudes, and practices of PHC students regarding preconception care. All PHC nursing students from the targeted sites make up the population in the findings, which can be generalised to all the PHC nurses. Considering the small accessible population size, all the 163 nurses were invited to participate in the study. This population size is considered suitable for this study for several reasons as follows: the topic of this study is relevant to their programme of study. This is because primary health care nursing students are required to participate in the health promotion and delivery practices, after successful completion of the programme of study. It is therefore envisaged that an adequate understanding of the preconception care services will have a triple effect on the nursing students and the larger community, as these nursing students are likely to be consulted for information regarding preconception care. In addition, they will work in primary health care settings, where PCC is expected to be delivered to the community.

### **3.6.1. Inclusion Criteria for the Study**

The inclusion criterion considers all nurses enrolled in the PHC Programme and registered with SANC with general, community and midwifery as their qualification, and were willing to participate in the study.

### **3.6.2. Exclusion Criteria for the Study**

This study excluded all those who had de-registered, were on long sick leave or those that do not practice in a primary health care setting and do not render services to women in the reproductive age. The study also excluded all PHC students under the age of 18 years from responding to the questionnaire for this study, as we did not want to infringe on their rights.

## **3.7. SAMPLE AND SAMPLING STRATEGY**

Sampling strategy is the method used to select a sample in a study, while the sample is the process of selecting a portion of the population to represent the entire population (Polit and Beck, 2012). This study used no sampling method as all the qualified participants in the selected centres were requested to participate in the study.

All the primary health care nurses from the selected sites who met the criteria were included in the study and all those that were available on the day of data collection and agreed to participate in the study were used for the study, but 138 out of 163 participated in the study.

Thus, the sample size was 163 based on the population of the selected sites. According to Kish-Leslie (1965), a formula which was adopted to guide the sample size for this exploratory study, states that for a population of 175 a sample size of 122 respondents is needed to achieve a precision of 5% and at 95% confidence level (Kish, 1965) cited by (Israel, 1992). For this study, the population was 163 and the sample size was 138, which is acceptable.

### **3.8. DATA COLLECTION INSTRUMENT**

Data for the study was collected using a self-administered questionnaire. Self-report is a method of collecting data that involves a direct report of the information by the person who is being studied using a questionnaire or an interview (Polit and Beck, 2012). This method was chosen because it saves time and is convenient for the researcher considering the available time. The respondents completed the questionnaires at their own suitable time after they were distributed to them individually by the researcher. Furthermore, Polit and Beck (2012) argued that self-report helps to elicit information on how people think, feel and believe, and questionnaires were found to be a most appropriate instrument to gather substantial amounts of factual information, concerning knowledge and attitude from a large population in this study. The knowledge, attitude, and practices of PHC students towards preconception care were obtained using the self-report method to gather information as mentioned above.

According to Burns and Grove (2011), a questionnaire is a printed self-report form, designed to obtain information that can be elicited through the written responses of the subjects. The researcher adapted the questionnaire from two sources (van Voorst et al., 2016; Heyes et al., 2004) but the bulk of the questions were from Heyes et al., 2004. Consequently, permission was sought from both parties to use their instrument. The questionnaire was adapted because it was found to be relevant and suitable for the study. The section on practice, facilitators, and barriers to preconception care was adapted from Heyes et al. (2004), while the section for knowledge and attitude was adapted combining the two tools (van Voorst et al., 2016; Heyes et al., 2004). The researcher added a section on the nurses' demographic data. However, the questionnaire has been modified and merged to achieve all the objectives of this study.

This quantitative data approach has numerical discrete, ordinal and nominal scales. The questionnaire is divided into five sections (A-E). Section A comprises the background variables, which are the demographic characteristics and include questions on age, gender, race, religion, marital status, years of experience, employment area and study centre. Section



B is on practices and consists of seven questions. For the first three questions, the respondents are required to answer “yes” or “no” depending on their practices. For the last three questions, the respondents are required to choose from the lists provided to them according to their practice.

Section C on knowledge is divided into two parts. The first part consists of twelve statements on a five-point Likert scale ranging from ‘strongly disagree’ to ‘strongly agree’. The items were scored by adding up the responses to a minimum of four and a maximum of twenty. A score of 22-29 was considered low and a score of 30-39 was considered medium, while a score of 40-50 was considered high. The responses were further collapsed into three categories of ‘agree’, ‘disagree’ and ‘uncertain’ due to a few observations on some of the response options.

The second part, to assess how important they think various advice and screening are, comprises of eight items. It is made up of a five-point Likert scale ranging from ‘of no importance’ as 1 to ‘very important’ as 5. A score of 60-75 was considered low, while a score of 75-90 was considered high. On presentation of the results, due to the lack of responses on some options, the responses were further collapsed with options of ‘of no importance and ‘little importance’ combined as ‘little importance’ and ‘important’ and ‘very important’ combined as ‘important’.

Section D on attitude towards preconception care comprises of twelve questions on a five-point Likert scale ranging from ‘strongly disagree’ to ‘strongly agree’. The items were scored by adding up the responses to a minimum of four and a maximum of twenty. A score of 20-40 was considered as a less favourable attitude, while a score of 40-60 was considered a more favourable attitude. The responses were further collapsed into three categories of ‘agree’, ‘disagree’ and ‘neutral’ due to a few observations on some of the response options. The responses were further collapsed into three categories of ‘agree’, ‘disagree’ and ‘uncertain’ due to a few observations on some of the response options.

Section E on barriers and facilitators of preconception care services is made up of thirteen questions. The first question on the facilitation is about training on PCC, which requires them to either choose ‘yes’ or ‘no’. The second question is to assess how useful their current training is to PCC. It was made up of a five-point Likert scale from ‘very useful’ to ‘not at all useful’. The remaining eleven questions on a five-point Likert scale ranging from ‘strongly disagree’

to ‘strongly agree’ The responses were further combined into three categories of ‘agree’, ‘disagree’ and ‘uncertain’ due to few observations on some of the response options.

### 3.9. MECHANISM TO ENSURE QUALITY

#### 3.9.1. Validity

The research instrument was adapted from a similar study that was conducted in the UK, proving the validity and reliability of the instrument. Content validity refers to the degree to which an instrument has an appropriate sample of items for the construct being measured (Polit and Beck, 2012). It also refers to whether items measure the content they were intended to measure (Creswell, 2013). Polit and Beck (2012) further explained that content validity is necessarily based on judgment, since there is no completely objective method of ensuring content coverage of an instrument. Content and face validity of the instrument was ensured as thus:

The content validity was ensured through extensive literature review, which assisted the researcher to confirm that all the different components of the variables seen in the literature review are represented throughout the study. In addition, the objectives of the study were used to cross-check whether all the items in the instrument were answering the objectives of the study. The conceptual framework which is used for this study is the precede-proceed model. It guides the contents of the instrument in this study to ensure that all the variables are included. The Table 3.1 below explains the relating objectives of the study as well as constructs in the theoretical framework to the specific questions on the instrument.

**Table 3.1: Content validity for the study**

Objective	Research question	Conceptual framework	Items in the instrument
Knowledge about preconception care	What is the nurses level of knowledge about PCC?	Predisposing factor	Items 15-28
Attitudes towards preconception care	What is the nurses' attitude towards PCC?	Predisposing factor	Items 29-41
Practices of preconception care	How are the nurses practising PCC?	Predisposing factor and actual intervention	Items 8-13
Facilitators to preconception care and Barriers to preconception care	What do the nurses perceive as facilitators and barriers to rendering PCC?	Enabling and reinforcing factors	Items 42-50 Items 51-55

Face validity refers to whether an instrument looks as though it is measuring the appropriate construct (Polit and Beck, 2012). However, to ensure both face and content validity, the researcher asked for the assistance of the supervisor.

### **3.9.2. Reliability**

The reliability of the study was ensured by assessing the instrument for internal consistency. According to Polit and Beck (2012), internal consistency refers to the degree to which the sub-parts of an instrument are measuring the same attribute or dimensions. The 'Cronbach's alpha test' was used to assess the internal consistency. Furthermore, the researcher ensured that the means and condition of administering the instrument are the same.

The instrument for data collection has been adapted from Heyes et al. (2004). The instrument was tested for internal consistency and it had an acceptable 'Cronbach's alpha'. Although the researcher modified the questionnaire, still the researcher sought the assistance of a statistician with the expertise to evaluate the internal consistency of the instrument. A test-retest method was carried out to measure the stability of the instrument over time. The test-retest involved five PHC facilitators and they were not included in the main study. It was done over two days. Test-retest reliability was analysed using the 'Kappa statistic', to test for acceptable reliability coefficient. This is because there is the need to re-evaluate every instrument since Burns and Grove (2011) stated that both reliability and validity are measured on a continuum, as no instrument is completely valid and validity varies from one sample to another and from one situation to another. The following is the 'Cronbach's alphas' for the various sections of the questionnaire: knowledge: 0.85, attitude: 0.70, facilitator and barriers: 0.74.

### **3.9. DATA COLLECTION PROCESS**

The researcher booked an appointment to meet with the target population after ethical clearance was obtained from the University Ethics Committee and permission obtained from the University faculty itself. This was to enable the researcher to gain access to the study respondents. Thereafter, a list of all the registered PHC students for 2017 academic year was obtained from the School of Nursing, showing their lecture timetables to help the researcher identify the most feasible days for data collection (Durban, Empangeni and Pietermaritzburg Centres). On meeting them, the purpose of the study was explained to them before the questionnaires were administered to them.

The researcher met the coordinator and facilitators of the PHC programme and explained the purpose of the study to them first. Previous arrangements were made with the lecturers to have access to the students in their free time, especially during break time in order to avoid disrupting the class sessions. The information sheet that contained the benefit and risk of participating in the study, with written informed consent was distributed together with the questionnaire to brief and obtain consent from each participant. The questionnaire was completed at the respondents' convenient time to avoid any form of coercion as mentioned above.

Data was collected as the questionnaires were distributed to them in their classrooms as it was the most convenient for them. Data collection took approximately two weeks. The researcher collected the data herself since the study was small and manageable. Moreover, this study was not funded. This experience also helped the researcher to ensure the anonymity of the study as the third party may not be completely trusted.

The researcher had a sealed box left in a convenient safe place where completed questionnaires sealed in envelopes separate from the consent form were constantly dropped throughout the data collection phase. This was to enable the respondents to complete and return the questionnaires at their convenience since it was not always possible for the researcher to be present all the time to collect the questionnaires. The sealed envelope was to ensure confidentiality, which is very important for all research study.

### **3.10. DATA ANALYSIS**

This study employs a quantitative approach. Therefore, the researcher sought the help of a statistician on the research design for appropriateness to meet the aims and objectives of the study before data collection and after data collection. Data analysis was done systematically using a quantitative study approach.

Responses from the respondents were grouped using the main variables in the study to enhance the quality of this research and enable classification of the responses. The data were analysed with the help of the university statistician. This was done to make sure that the data was analysed properly since the researcher is not skilled in statistical analysis. Data were analysed using statistical analysis. Statistical analysis helps the researcher to summarise, organise, evaluate, interpret and communicate numeric information (Polit and Beck, 2012). 'Statistical Package for Social Sciences' (SPSS) version 24 was used to capture and analyse

data. This method was chosen because the researcher is a bit acquainted with it. Descriptive statistics, mainly percentages, and frequencies, were used to describe and synthesise data, while histograms and frequency tables were used to display the frequency of data. Histograms and tables were used because they are easy to read and understand. The 'Pearson chi-square test' was used to test for association between any of the two categorical variables in the three centres. The 'Kruskal-Wallis test', 'Mann-Whitney U test', 'Fishers exact test' and 'Pearson chi-squared test' was used to test if the distribution of knowledge, attitude and practices differed across the nurses' social demographic characteristics. 'Pearson's correlation' was performed to assess if there was a relationship between knowledge, attitude and, practices. The level of significance was set at 0.05.

Data from the questions were coded numerically by assigning numbers to the responses given by the respondents to enable analysis of data. Coding is the process of transforming data into symbols compatible with computer analysis (Polit and Beck, 2012). This was achieved for this study.

### **3.11. DATA MANAGEMENT AND STORAGE**

Data was handled and stored in a way that enables it to be accurately reported, interpreted, verified and reconstructed while protecting respondents' confidentiality (Roberts and Priest, 2010).

Once the data had been captured in the computer, and analysis had been concluded the questionnaires were kept under lock and key. Only the researcher and the supervisor have access to this locker. Hence, the data collected was managed well. Computer and information will be kept in files that have a password that only the researcher and the supervisor can access. The respondents were assured that the final product will be figures that will be generalized to the whole population. This information will be deleted from the database that it is kept in and the questionnaire destroyed completely by shredding, at the end of the five-year period.

### **3.12. ETHICAL CONSIDERATION**

Ethical clearance for the study was obtained from the University of KwaZulu-Natal Ethical Committee. This was done to protect the rights of the respondents. Permission from the

University of KwaZulu-Natal was also sought from the dean before conducting the study. The respondents gave their consent before the questionnaires were distributed to them.

Ethical considerations in research are based on the ethical principles of respect for people, beneficence and, justice, and all these were ensured in this study to protect the respondents from harm and to ensure fairness in the research process. This study also subscribes to the ethical standards as described by Emanuel, Wendler, Killen and Grady (2004) that described ethical consideration as principles and benchmarks for multinational clinical research. It was noted that the exploitation of respondents must not occur and that collaborative partnership, social value, favourable risk-benefit ratio, the fair selection of study population and respect for recruited respondents should be considered.

### **3.12.1. Collaborative Partnership**

According to Emanuel (2004), the collaborative partnership involves the formation of partnerships between the researcher, policy makers, and the community. In this partnership, responsibilities are to be shared in conducting and overseeing the research, while respecting the community's values and culture. It is the responsibility of the researcher to ensure that the respondents received benefits from the conduct and results of the study through fair treatment in the course of the study (Emanuel et al 2004). To ensure that this principle is maintained in this study the researcher engaged all the stakeholders (the students, the university management, and the lecturers) in the conduct of the study. Their suggestions on the best feasible way to conduct the study were sought and they also assisted in conducting the study by allowing the researcher to access the respondents.

### **3.12.2. Social Value**

The principle of the social value involves the researcher specifying who will benefit from the study and what values the study will be adding to the existing body of knowledge. It also specifies the importance of the phenomena being investigated (Emanuel et al 2004). To ensure that the principle of social value is ensured, the researcher informed the respondents in the information sheets about the significance of the study. This is to ensure that everyone benefits from the study, directly or indirectly by attending conferences, workshops and disseminating the findings from this study. The research will have a social value for both the policy makers and the general public.

### **3.12.3. Respect for Recruited Respondents and Study Community**

Under this principle, the researcher develops and implements procedures to protect the confidentiality of the study respondents and ensures voluntary participation and freedom to withdraw without recrimination (Emanuel et al 2004).

Respect for human dignity was ensured by providing the respondents with all the necessary information about the study, including the objectives, nature of the study, methods of data collection, confidentiality guarantee, risks, and benefits. This information helped them to make an informed consent. Respondents were assured that participation in the study was voluntary, so they were free to withdraw at any time, if they chose to, without any consequences. They were not forced in any way to participate in the study. The researcher also provided them with contact details of the investigator and the supervisor, so that they could contact them at any time for further enquiry about the study if they wished.

### **3.12.4. Favourable Risk-Benefit Ratio**

The researcher assesses the possible risks and benefits of the research to the study population in the context of its health risks. The researcher also assessed the risk-benefit ratio by comparing the net risks of the research project with the potential benefits derived from the study (Emanuel et al 2004).

To promote favourable risk-benefit ratio, the researcher assured the respondents that the information would not be used against them, neither would their names appear on the final document, nor in the publication that would be published from this study. The respondents would also be informed about the benefits of the study and how the findings would be used to make recommendations on how to improve their skills as PHC nurses for effective provision of PCC. Furthermore, there are no physical, social and psychological risks in participating in this study.

The respondents were informed of all the proposed activity and questions so that they could withdraw if they were not comfortable with them.

### **3.12.5. Informed Consent**

The researcher first obtained an informed consent from the respondents. Informed consent means that respondents and communities are involved in the recruitment procedure, and the

information is culturally and linguistically appropriate. They had the freedom to refuse or withdraw from the study (Emanuel et al 2004). To ensure that informed consent was given for this study, explanations about the study were given to the respondents. The information was provided verbally to give the respondents a chance to seek clarification, followed by the written information. Those that agreed to participate were asked to sign a consent form, which is a binding contract between the researcher and the respondents. This consent form serves as a legal document for this study.

### **3.12.6. Fair Selection of Study Population**

The researcher selects the study population in a way that guarantees scientific validity of the research and the selection is also done in such a way to curtail the risks of the research and the vulnerable population should be identified and protected (Emanuel et al 2004). Fair selection of the population was ensured by selecting the study sites based on their geographical location thereby, ensuring that different attributes of the respondents were considered. In this study, there was no vulnerable population such as children, elderly or pregnant women and therefore no need for protection.

### **3.12.7. Confidentiality and Anonymity**

The principle of confidentiality ensures the protection of the respondents' privacy on information when conducting research especially personal and private information (Roberts and Priest, 2010). Researchers undertook to keep all information confidential and secure, and respondents would be informed where and how it would be stored, who would have access to it and how it would be used. The respondents were encouraged not to share their information with anyone and they were equally assured that no other person, apart from the researcher and the supervisor, would have access to the information. All the above-mentioned measures were followed in this study.

The anonymity of the respondents was ensured by making sure that no names were used on the questionnaire. An envelope was given to the respondents where the completed questionnaire was sealed for return and care was taken not to put the consent forms in the same envelope as the questionnaire, so that the researcher would not be able to trace the owners of the questionnaire. Moreover, to further ensure anonymity, no names were used in the consent forms, only the signatures. The researcher was involved in the data collection process, therefore, no third person interference. A sealed box was placed in each classroom



where the respondents dropped the sealed envelopes for collections, which were later emptied daily, during the data collection process. This was to give the respondents enough time to fill in the questionnaire, without being in a hurry.

### **3.13. DISSEMINATION OF DATA**

The findings from this study will be presented to the University understudy in a hard copy and another copy will be made available to the University library. The researcher and the supervisor will also publish the findings in an accredited scientific nursing journal. The names of the respondents, the institution used, as well as the study setting, will be kept confidential.

### **3.14 CONCLUSION**

This chapter presented the methodology of the study, research paradigm, data collection, management and analysis, ethical consideration as well as the data dissemination plan. The next chapter will present the findings of the study.

## **CHAPTER FOUR**

### **PRESENTATION OF THE FINDINGS**

#### **4.1 INTRODUCTION**

This chapter highlights the findings of the study whose aim was to explore and describe the knowledge, attitude, and practice of primary health care students regarding preconception care in a selected higher education institute in the eThekweni District. The respondents of the study were all primary health care nursing students who were always in contact with women of reproductive age and who worked in various primary health care clinics in the selected district. Due to the large population of this group in the selected higher education institute, three sites were used according to their geographical location with a population of (N=163). All the nurses were invited to participate in the study. A total of 138 nurses agreed and participated, giving a response rate of 85%.

A self-administered questionnaire was used for data collection and 'SPSS package, Version 24.0' was used to organise and analyse the raw quantitative data. The findings have been presented in frequency, figures, and tables. Descriptive statistics that describe one variable at a time were used, that is the frequencies, percentages, means and the unvaried standard deviation, using contingency tables. Additionally, the statistical test such as; 'Pearson's Chi-Square and Pearson's correlation test' were performed to test for associations and relationships between different social-demographic variables and knowledge, attitude and practice. The 'Kruskal-Wallis' test, 'Mann-Whitney U' test, and 'Fishers exact' were used to test if the distribution of knowledge, attitude, and practices differed across the nurses' social demographic characteristics.

The findings have been presented as follows:

- Social-demographic data;
- Knowledge of preconception care;
- Attitude towards preconception care;
- Practices of preconception care;

- Relationship between social-demographic factors, practices, knowledge, and attitude towards preconception care;
- Perceived facilitators to the rendering of preconception services;
- Perceived barriers to the rendering of preconception services.

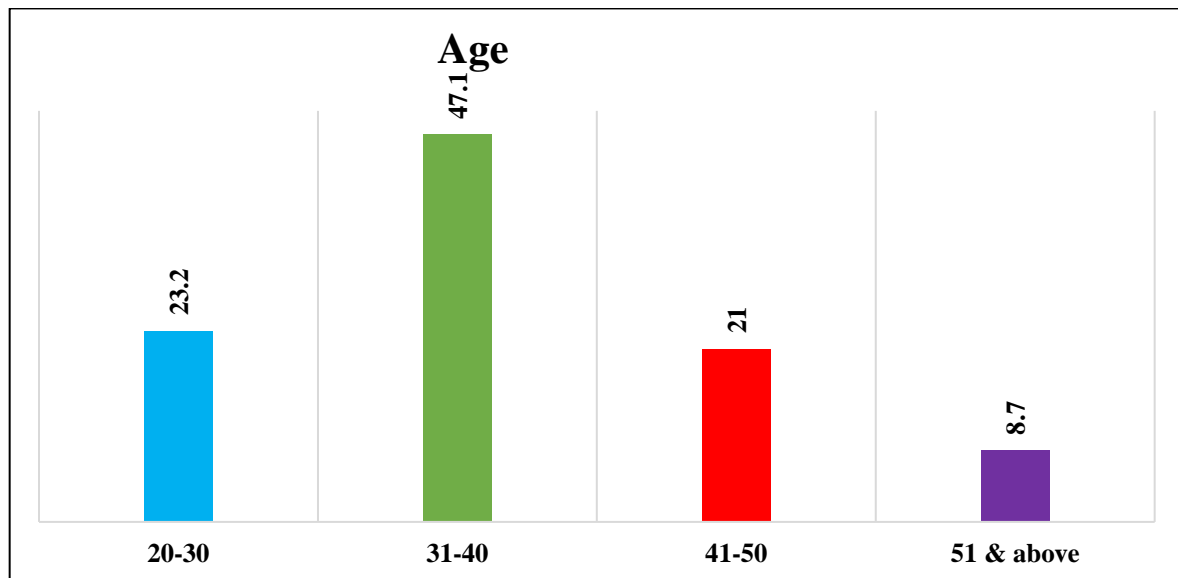
## 4.2 SOCIAL DEMOGRAPHIC CHARACTERISTICS

The respondents' social-demographic variables comprised age, gender, race, religion, marital status, length of time in the department, employment area and study centre.

### 4.2.1 Age of the respondents

With the age of the respondents, the majority (47.1%: n=65) fell within the age range of 31-40, followed by 23.2% (n=32) who fell into the age range of 20-30 years. The 41-50-year age group comprised 21.0% (n=29) of the respondents and the smallest group were those who were older than 51 years; 8.7 % (n=12).

Consequently, the majority of the respondents (70.3%: n=97) were younger than 41 years.



**Figure 4.1: Age of the respondents**

#### 4.2.1.1 Influence of age on other socio-demographic variables

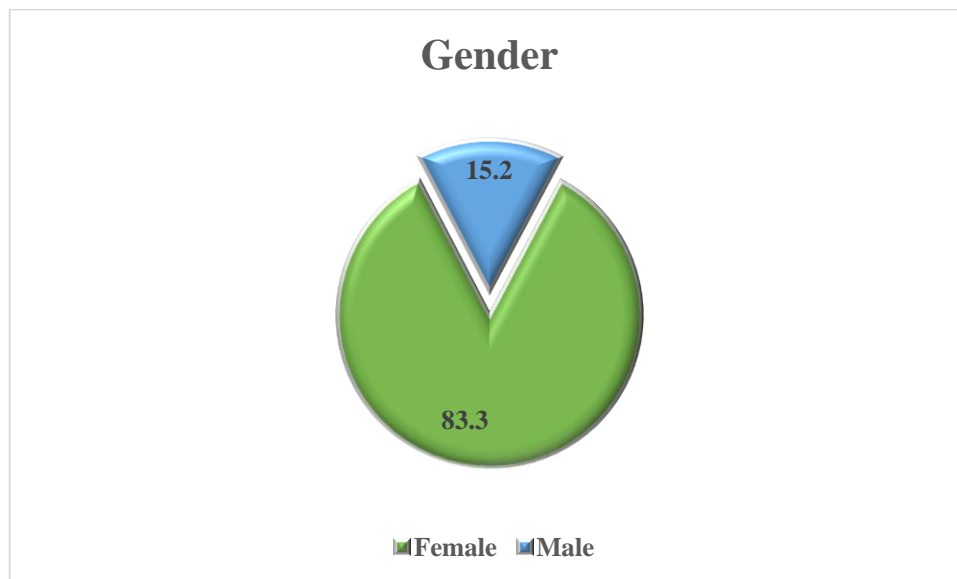
A Cross tabulation was performed to determine the association between the demographic variables, age was the only demographic variable that demonstrated a significant association with others (Table 4.1.).

**Table 4.1: Cross tabulation of age and other socio-demographic variables**

Variable	Test	Value	df	p-value
Year of experience	Fishers exact	17.7	0	0.009
Marital status	Fishers exact	18.6	0	0.008
Employment area	Fishers exact	15.7	0	0.020

#### 4.2.2 Gender of the respondents

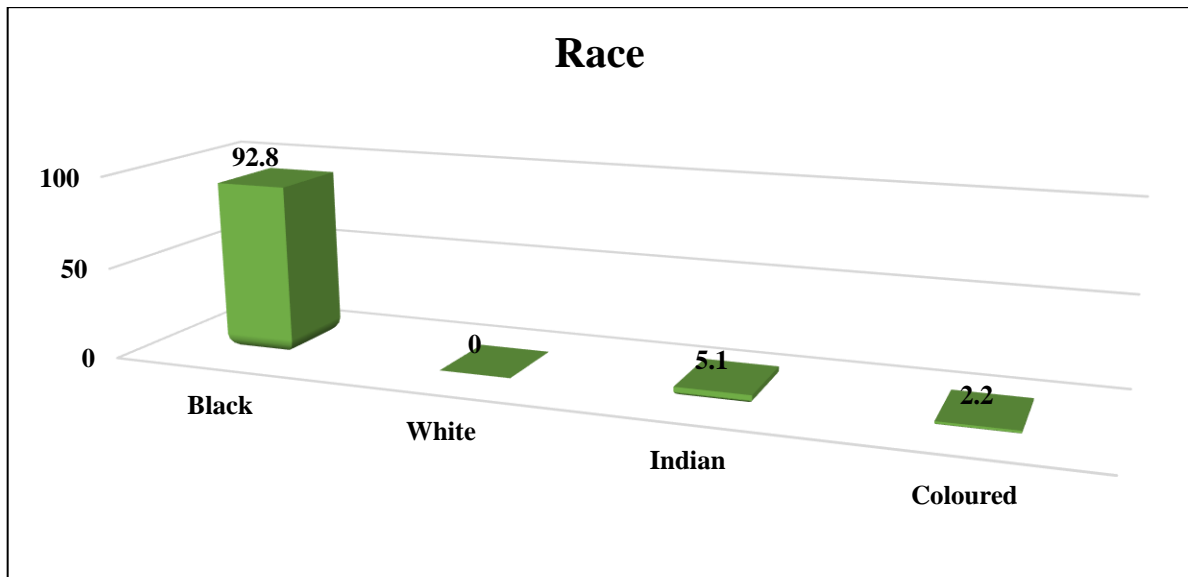
The results displayed in Figure 4.2 showed that the PHC nursing students' population was predominantly female (83.3 %: n=115), while males were 15.2% (n=21).



**Figure 4.2: Gender of the respondents**

### 4.2.3 Race of the respondents

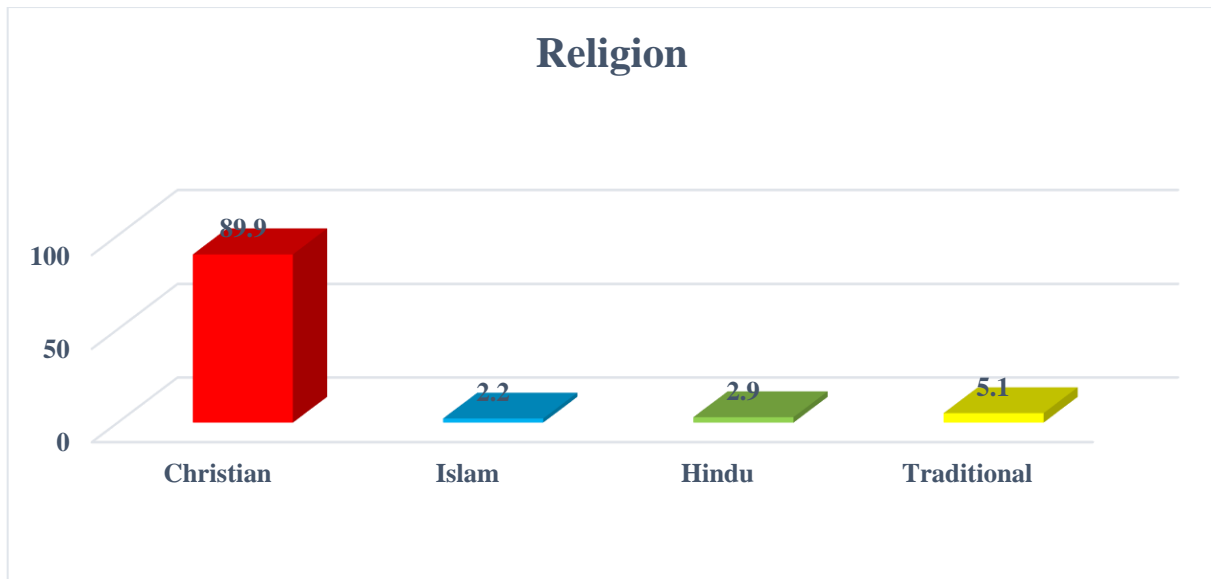
The results shown in Figure 4.3 demonstrated that the majority of the respondents 92.8% (n=128) were Blacks followed by Indians 5.1% (n= 7). The Coloured population were in the minority making up only 2.2% (n=3) of the respondents, while none of the respondents was White.



**Figure 4.3: Race of the respondents**

### 4.2.4 Religion of the respondents

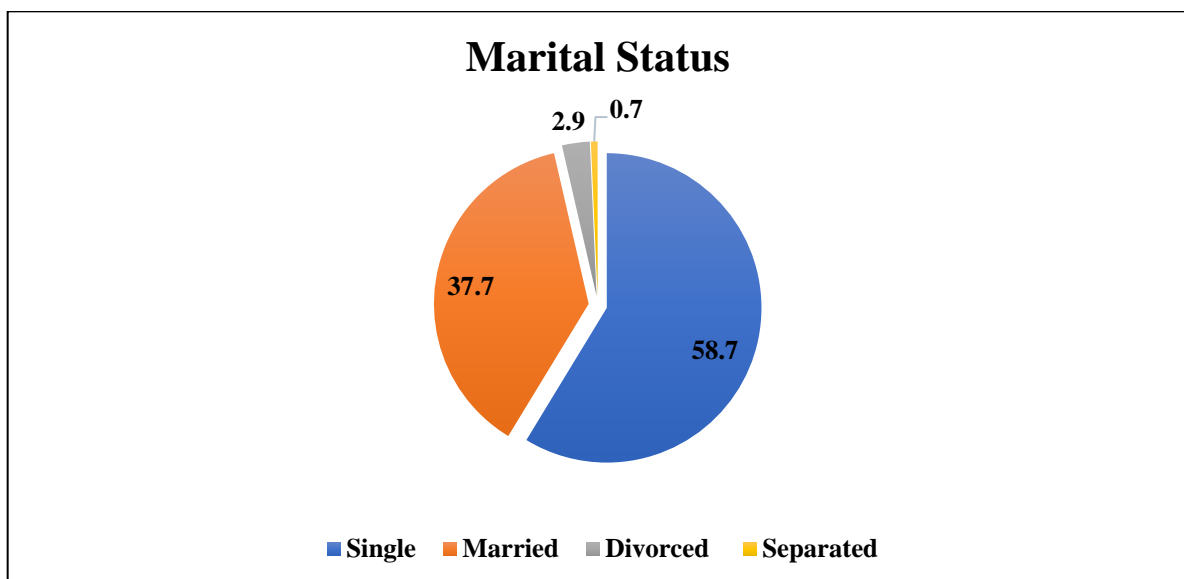
It was found from this study that the majority of the respondents 89.9% (n=124) were Christians and 5.1% (n=7) were traditional, while about 2.9% (n=4) were Hindu and 2.2% (n=3) were Islam. (Figure 4.4).



**Figure 4.4: Religion of the respondents**

#### **4.2.5 Marital status of the respondents**

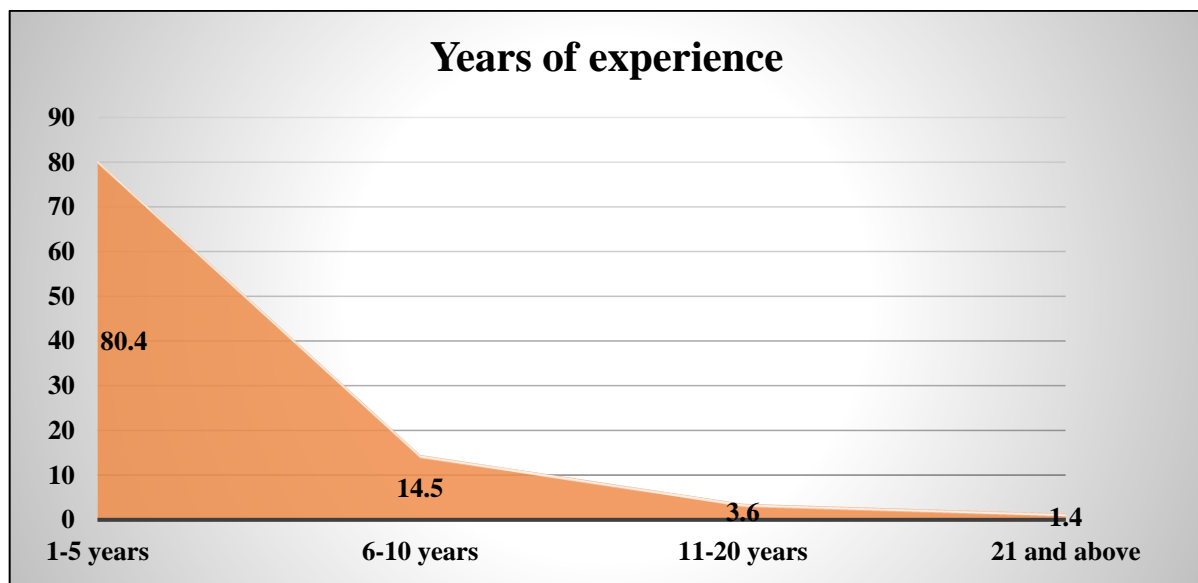
The responses of the respondents on their marital status indicated that most of the respondents 58.7% (n=81) were single and 37.7% (n=52) were married, while 2.9% (n=4) were divorced and .7% (n=1) were separated.



**Figure 4.5: Marital status of respondents**

#### 4.2.6 Years of practice experience as a PHC nurse

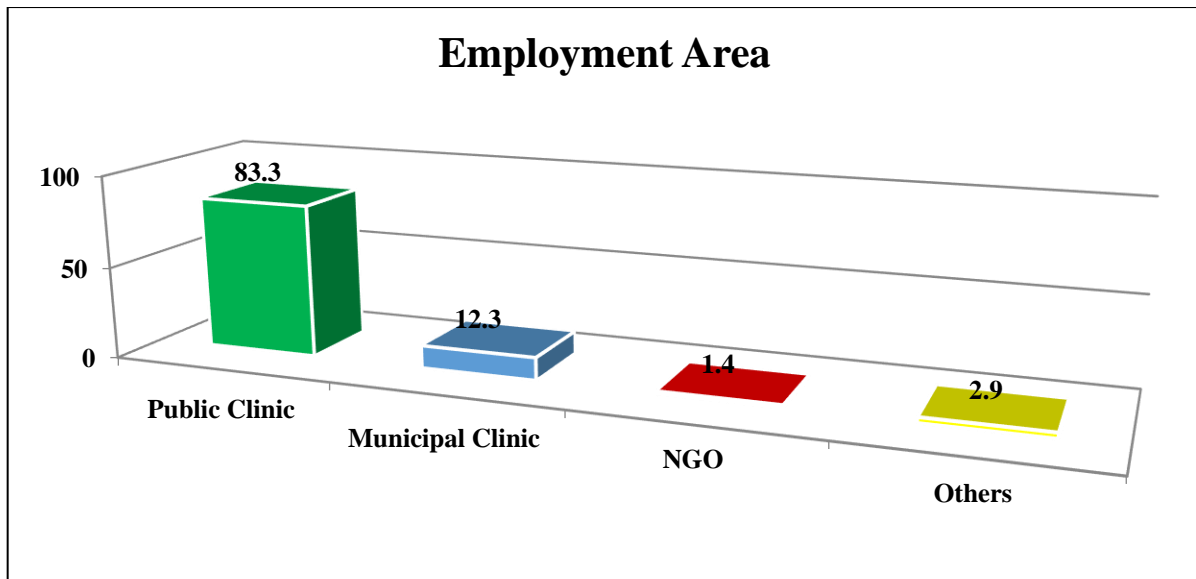
When put into groups, the biggest group of respondents, which were more than two-thirds of the respondents (80.4%: n=111) had practised for 1-5 years followed by 14.5% (n=20) who had practised as PHC nurses for 6-10 years. Those that had practised for 11-20 years comprised 3.6 % (n=5) of the respondents and the smallest group of respondents (1.4%: n=2) had practised as PHC nurses for 21 years and above. Thus, the majority of the respondents had not practised in this department for a long duration (Figure 4.6).



**Figure 4.6: Years of experience**

#### 4.2.7 Employment area of respondents

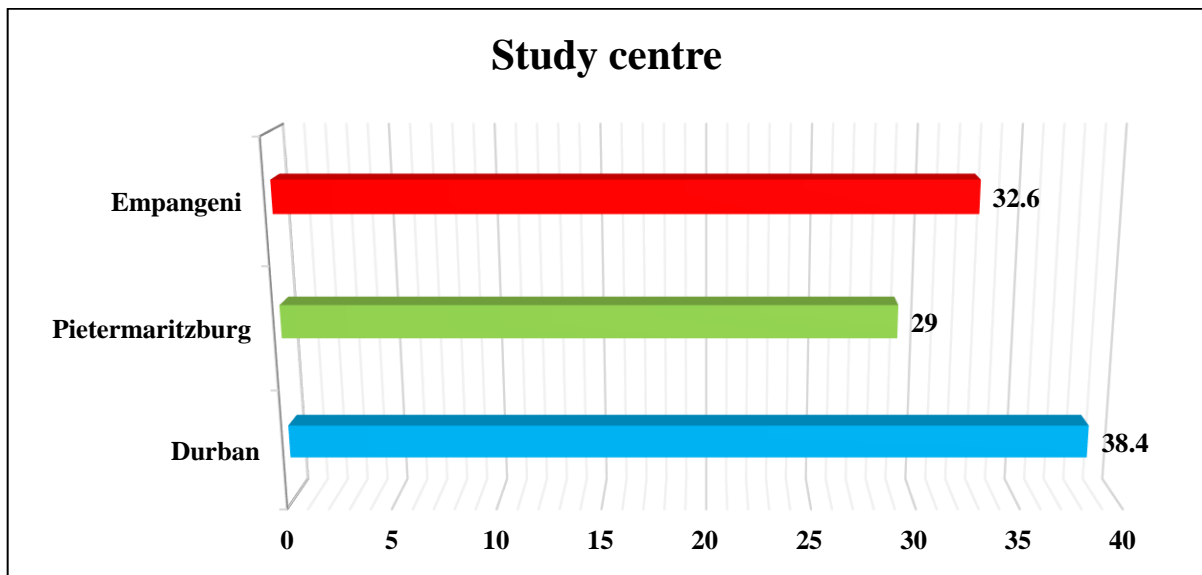
The findings indicated that the majority of the respondents were working in the public clinics as they comprised 83.3% (n=115) of the sample, followed by those who worked in municipal clinics comprised 12.3% (n=17) of the respondents, while 2.9% (n=4) indicated that they had worked in other facilities not mentioned and 1.4% (n=2) had worked with NGO's (Figure 4.7.).



**Figure 4.7: Employment Area**

#### **4.2.8 Study centre of respondents**

The respondents were also asked to indicate which centre they had studied at. The results displayed in Figure 4.8 indicated that (38.9%: n=53) were from the Durban centre and 32.6% (n=45) indicated that they were from the Empangeni centre, while 29.0% (n=40) indicated that they had studied at Pietermaritzburg.



**Figure 4.8: Study Centre**



### **4.3 THE RESPONDENTS LEVEL OF KNOWLEDGE REGARDING PRECONCEPTION CARE**

The participant's level of knowledge is divided into two due to the use of different Likert scale for the two parts. Therefore, they were labelled knowledge I and II.

#### **4.3.1 Knowledge I**

The first part was measured using ten items on a five-point Likert scale, which ranged from 'strongly disagree' to 'strongly agree'. However, due to a few responses on some options and for easy presentation of the table, the scale was reduced to only three options, with the options of 'strongly disagree' and 'disagree' being combined as 'disagree', and 'strongly agree' and 'agree' being combined as 'agree'.

The findings as displayed in Table 4.2 showed that the majority of the respondents 88.4% (n=122) indicated that they had agreed with the statement, that PCC can lead to better pregnancy outcome, while 9.4% (n=13) had disagreed with the statement and 2.2% (n=3) had been uncertain about the statement. With regards to whether PCC would not change the patient's risk profile, which is a negative statement, more than two-thirds of the respondents 68.1% (n=94) had disagreed with the statement, while 18.8% (n=26) had agreed and 13.0% (n=18) had been uncertain about the statement. When asked whether PCC should only be offered to women with high risks, a further majority 81.2 % (n=112) had disagreed with the statement, while 11.5% (n=16) had agreed and 7.2% (n=10) had been uncertain about the statement.

The majority of the respondents 92% (n=127) indicated that they had agreed, that PCC could reduce the incidences of unplanned and unwanted pregnancy, while 5.1% (n=7) disagreed and 2.9% (n=4) had been uncertain about it. Similarly, a further 92.8% (n=128) had agreed that PCC could reduce maternal and child mortality rate, while 6.5% (n=9) had disagreed and .7% (n=1) had been uncertain about the statement. Regarding whether PCC was for all women of child-bearing age 89.9% (n=124) had agreed with the statement, while 7.9% (n=11) had disagreed and 2.2% (n=3) had been uncertain about it. On the other hand, regarding the statement that said that there was no PCC policy in South Africa, 44.9% (n=62) had been uncertain, while 39.2% (n=54) had disagreed and 15.9% (n=22) had agreed with the statement. Most of the respondents 84.1% (n=116) had agreed, that PCC could reduce the incidences of HIV PCR positive, while 10.2% (n=14) had disagreed and 5.8% (n=8) had been

uncertain. When asked if PCC could reduce the chances of acquiring HIV among serodiscordant couples, more than two-thirds of the respondents 71.8% (n=99) had agreed with the statement, while 18.8% (n=26) had been uncertain and 9.4% (n=13) had disagreed with the statement. Likewise, regarding the statement that there was little evidence base for PCC, 42.8% had agreed with the statement, while 34.8% (n=48) had been uncertain and 22.4% (n=31) had disagreed with the statement.

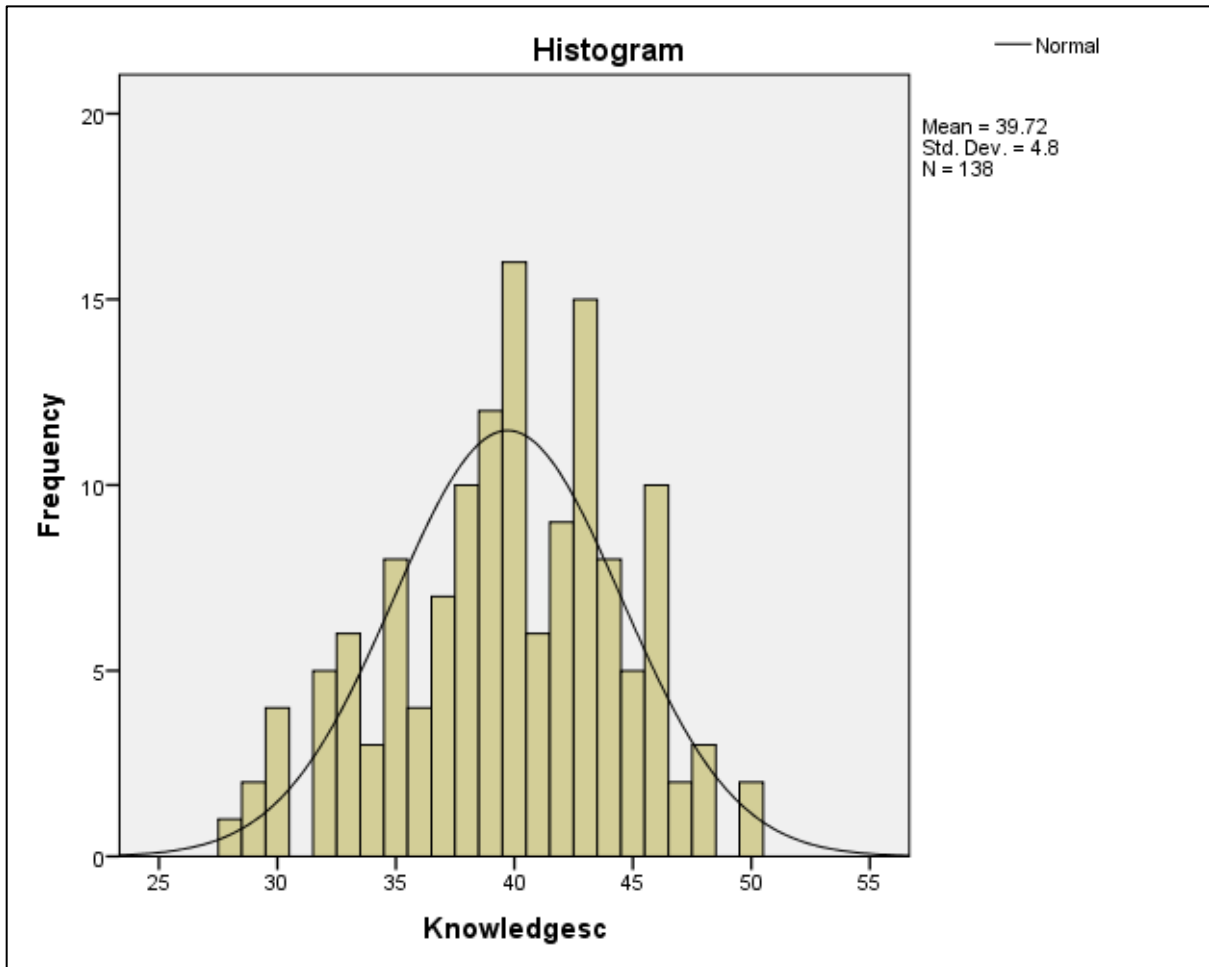
**Table 4.2: Respondents Knowledge I**

Variables	Disagree		Uncertain		Agree		Mean
	Freq	%	Freq	%	Freq	%	
PCC can lead to better pregnancy outcome	13	9.4	3	2.2	122	88.4	4.37
PCC will not change my patient risk profile	94	68.1	18	13.0	26	18.8	3.72
PCC should only be offered to women with high risks	112	81.2	10	7.2	16	11.5	4.09
PCC can reduce the incidences of unplanned and unwanted pregnancy	7	5.1	4	2.9	127	92	4.46
PCC can reduce maternal and child mortality rate	9	6.5	1	.7	128	92.8	4.44
PCC is for all women of child bearing age	11	7.9	3	2.2	124	89.9	4.38
There is no PCC policy in South Africa	54	39.2	62	44.9	22	15.9	3.39
PCC can reduce incidences of HIV PCR positive	14	10.2	8	5.8	116	84.1	4.16
PCC can reduce the chances of acquiring HIV among serodiscordant couple	13	9.4	26	18.8	99	71.8	3.96
There is little evidence base for PCC	31	22.4	48	34.8	59	42.8	2.75

#### 4.3.1.1 Overall knowledge 1 score

As discussed earlier, the knowledge part is divided into two, due to the use of different Likert scales for the two parts. Therefore, they were labelled knowledge I and II. The respondents responded to the knowledge I questions is on a five-point Likert scale, ranging from ‘strongly

disagree' as a score of one, 'disagree' as two, 'uncertain' as three, 'agree' as four and 'strongly agree' as five for positive statements and reversed in a negative statement. This part had ten items, thus the possible minimum score was 10 and the maximum score was 50. The minimum score for the respondents was 28 and the maximum score was 50. The mean knowledge score was 39.7 with a standard deviation of 4.8 (Fig. 4.9). Hence on average, the result indicated that the participant were knowledgeable about PCC.



**Figure 4.9: Histogram of Knowledge I score**

On grouping of the scores, with a score of less than 39 indicating low knowledge and 40-50 high knowledge, the majority of respondents 55.0% (n=76) fell within the high knowledge group while 45.0% (n=62) were in the low knowledge group (Table 4.3).

**Table 4.3: Grouping of knowledge I score**

Knowledge	Score	n	%
Low Knowledge	Less than 39	62	45.0
High Knowledge	40-50	76	55.0
Total	50	138	100.0

**4.3.1.2 Influence of employment area on knowledge I**

Cross tabulation was done to determine the relationship between the employment area and knowledge. The results displayed in Table 4.4 showed that nurses employed in the municipal clinics are more knowledgeable compared to the rest of the categories, as most of them had high knowledge 76.5% (n=13) and 23.5% (n=4) had low knowledge. Nurses in the public clinic, on the other hand, followed with 53.0% (n=61) having high knowledge and 46.9% (n=54) having low knowledge. Furthermore, with those in the other group, an equal number 50% (n=2) had low and high knowledge respectively, while the nurses working with the NGO's were the less knowledgeable, with all the respondents 100% (n=2) having low knowledge. 'Fisher's exact test' showed a significant association; 'Exact value'= 25.9, df = 0, p-value = 0.049.

**Table 4.4: Employment area and knowledge I**

Employment area		Knowledge I				P value
			Low	High	Total	
	Public clinic	n	54	61	115	0.049
		%	46.9%	53.0%	100.0%	
	Municipal clinic	n	4	13	17	
		%	23.5%	76.5%	100.0%	
	NGO	n	2	0	2	
		%	100%	0.0%	100.0%	
	Others	n	2	2	4	
		%	50.0%	50.0%	100.0%	
Total		n	62	76	138	
		%	45.0%	55.0%	100.0%	

### 4.3.1.3 Influence of availability of protocols on PCC on knowledge I

A cross tabulation was done to determine the relationship between the availability of protocol and knowledge. The results displayed in Table 4.5 show that those that have an accessible written protocol on PCC in their practice are more knowledgeable than those that do not have, as 66.1% (n=41) had high knowledge and 33.8% (n=21) had low knowledge. Among those that do not have access to a written protocol, 53.9% (n=41) had low knowledge while 46.1% (n=35) had high knowledge. ‘Pearson Chi-Square test’ shows a significant association; ‘Pearson value’= 6.9, df = 2, p-value = 0.022.

**Table 4.5: Availability of protocol and knowledge I**

Availability of protocol		Knowledge I				P value
			Low	High	Total	
	Yes	n	21	41	62	0.022
		%	33.8%	66.1%	100.0%	
	No	n	41	35	17	
		%	53.9	46.1%	100.0%	
Total		n	62	76	138	
		%	45.0%	55.0%	100.0%	

### 4.3.2 Knowledge II

The second part of knowledge was measured using eighteen items on a five-point Likert scale ranging from ‘of no importance’ to ‘very important’. Moreover, due to few responses on some options, the scale was reduced to only three options, with the options of ‘of no importance’ and ‘of little importance’ being combined as ‘of no importance’ and ‘important’ and ‘very important’ combined as ‘important’. The results showed the respondent's knowledge level regarding some important aspects of preconception care and services. They were asked how important they felt that the following services were for people planning a pregnancy.

The findings as displayed in Table 4.6 showed that the majority of the respondents 91.3% (n=126) had indicated that advice on smoking was important. Only 7.2% (n=10) and 1.4% (n=2) had reported that it was of little importance and uncertain respectively. Regarding drug use, most of the respondents 92.1% (n=126) had indicated that advice on this to be important, while 6.5% (n=9) had indicated that it was of little importance and 1.4% (n=2) had indicated

that they were uncertain about the issue. When asked about the importance of weight control, 95% (n=131) had indicated that it was important, 3.6% (n=5) had indicated that they were uncertain and 1.4% (n=2) had indicated that it was of little importance. Pertaining exercise, 94.2% (n=130) had indicated that it was important, while 3.6% (n=5) had reported that they were uncertain and 2.1% (n=3) had reported that it was of little importance. With regards to the importance of advice on alcohol, 90.6% had indicated that it was important, 7.2% (n=10) had indicated that it was of little importance and 2.2% (n=3) had indicated that they were uncertain. When asked about the importance of diet, 96.4% (n=133) had reported that was important. Only 2.9% (n=4) and .7% (n=1) had reported 'uncertain' and 'of little importance' respectively.

Almost all the respondents 97.8% (n=135) had indicated that advice on maternity care was important, 2.2% (n=3) had indicated that they were uncertain, and only one person indicated that it was of little importance. The majority of the respondents 97.1% (n=134) had indicated that advice on genetic counselling was important, while 2.9% (n=4) were uncertain about it and no one had indicated that it was of little importance. Regarding advice on inherited disorders, most of the respondents 94.9% (n=131) had indicated that it was important, while 3.6% (n=5) had indicated that they had been uncertain and 1.4% (n=2) indicated that it was of little importance.

When asked about the importance of advice on chronic diseases, almost all the respondents 99.3% (n=138) had indicated that it was important, .7% (n=1) had indicated that they had been uncertain, and no one had indicated that it was of little importance. Pertaining folic acid supplementation, 94.9% (n=131) had indicated that it was important, while 5.1% (n=7) had reported that they had been uncertain, and no one had reported that it was of little importance. With regards to the importance of advice on occupational hazards, 91.3% had indicated that it was important, 5.1% (n=7) had indicated that they had been uncertain and 3.6% (n=5) had indicated that it was of little importance.

Furthermore, when asked about the importance of screening for rubella, most of the respondents 91.3% (n=126) had indicated that it was important, while 7.2% (n=10) had been uncertain about it and 1.4% (n=2) had indicated that it was of little importance. Pertaining screening for HIV, cervical cytology, genital infections and nutritional status, almost all the respondents 99.3% (n=131) had indicated that it was important, while .7% (n=1) had reported that it was of little importance, and no one had reported that they had been uncertain regarding

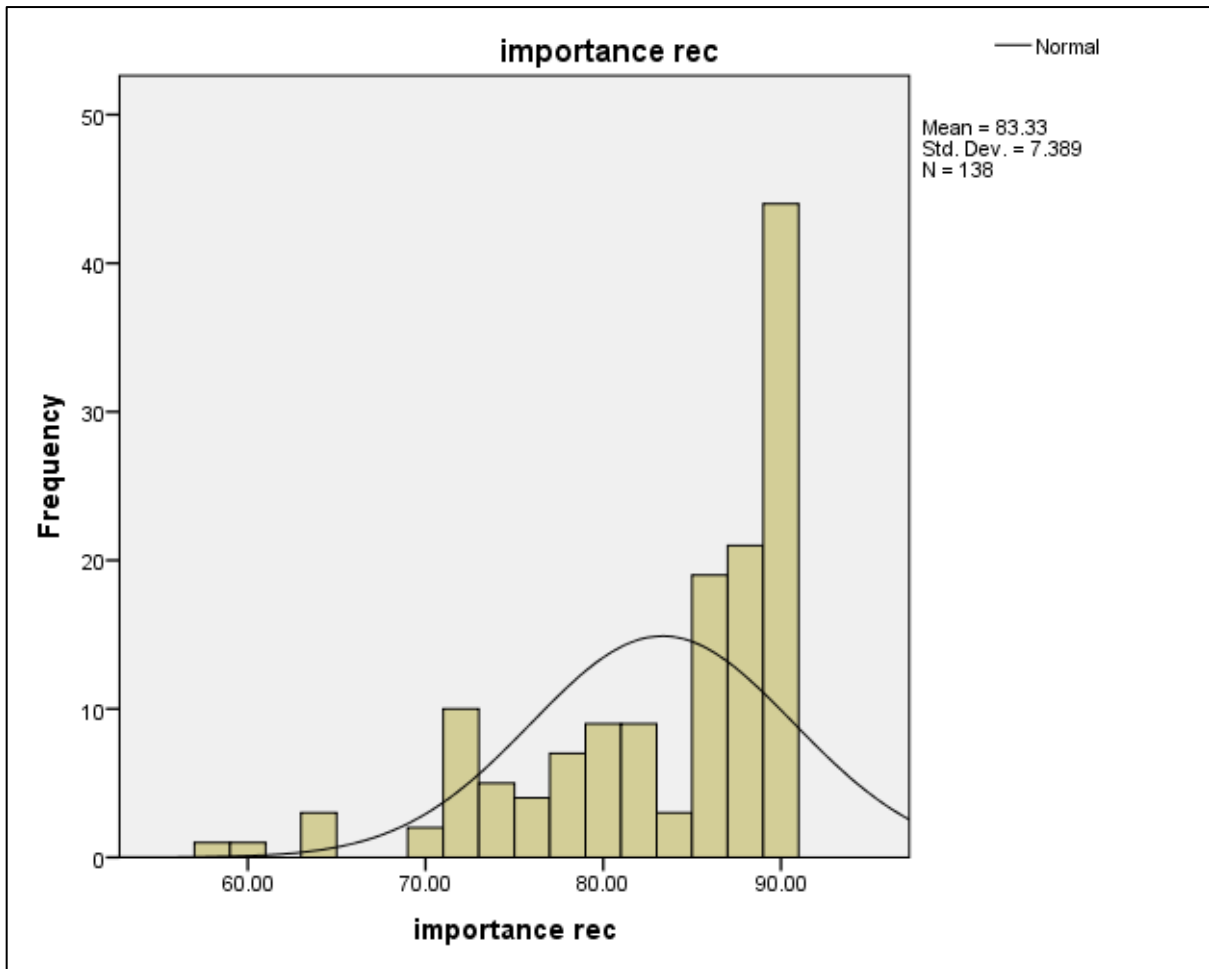
this. In the same vein, with regards to screening for hepatitis, 98.6% (n=136) had indicated that it was important, while 1.4% (n=2) had reported that it was of little importance, and no one had reported that they had been uncertain regarding this.

**Table 4.6: Respondents Knowledge II**

Variables Advice on	Of Little important		Uncertain		Important		Mean
	Freq	%	Freq	%	Freq	%	
Smoking	10	7.2	2	1.4	126	91.3	4.49
Drug use	9	6.5	2	1.4	127	92.1	4.54
Weight control	2	1.4	5	3.6	131	95	4.51
Exercise	3	2.1	5	3.6	130	94.2	4.41
Alcohol	10	7.2	3	2.2	125	90.6	4.52
Diet	1	.7	4	2.9	133	96.4	4.61
Maternity care	0	00	3	2.2	135	97.8	4.75
Genetic counselling	0	00	4	2.9	134	97.1	4.66
Inherited disorders	2	1.4	5	3.6	131	94.9	4.59
Chronic diseases	0	00	1	.7	137	99.3	4.72
Folic acid	0	00	7	5.1	131	94.9	4.54
Occupational hazards	5	3.6	7	5.1	126	91.3	4.50
<b>Screening for</b>							
Rubella	2	1.4	10	7.2	126	91.3	4.59
HIV	1	.7	0	00	137	99.3	4.83
Cervical cytology	1	.7	0	00	137	99.3	4.78
Hepatitis	2	1.4	0	00	136	98.6	4.75
Genital infections	1	.7	0	00	137	99.3	4.80
Nutritional status	1	.7	0	00	137	99.3	4.73

#### 4.3.2.1 Overall knowledge II score

This part had eighteen items, thus the possible minimum score was 18 and the maximum score was 90. The minimum score for the respondents was 58 and the maximum score was 90. The mean knowledge score was 83.3 with a standard deviation of 7.38 (Figure 4.10). Hence on average, the result indicated that the participant was very knowledgeable about advice and screening required in PCC.



**Figure 4.10: Histogram of Knowledge II Score**

On the grouping of the scores, with a score of less than 75 indicating low knowledge and 76-90 indicating high knowledge, the majority of respondents 83.3% (n=115) fell within the high knowledge group and only 16.7% (n=23) were in the low knowledge group (Table 4.7).

**Table 4.7: Grouping of knowledge II score**

	Score	n	%
Low	Less than 75	23	16.7
High	76-90	115	83.3
Total	90	138	100.0

#### 4.3.2.2 Influence of employment area on knowledge II

Cross tabulation of the respondents' employment area and level of knowledge (Table 4.8) showed that nurses employed in the public and municipal clinics were more knowledgeable



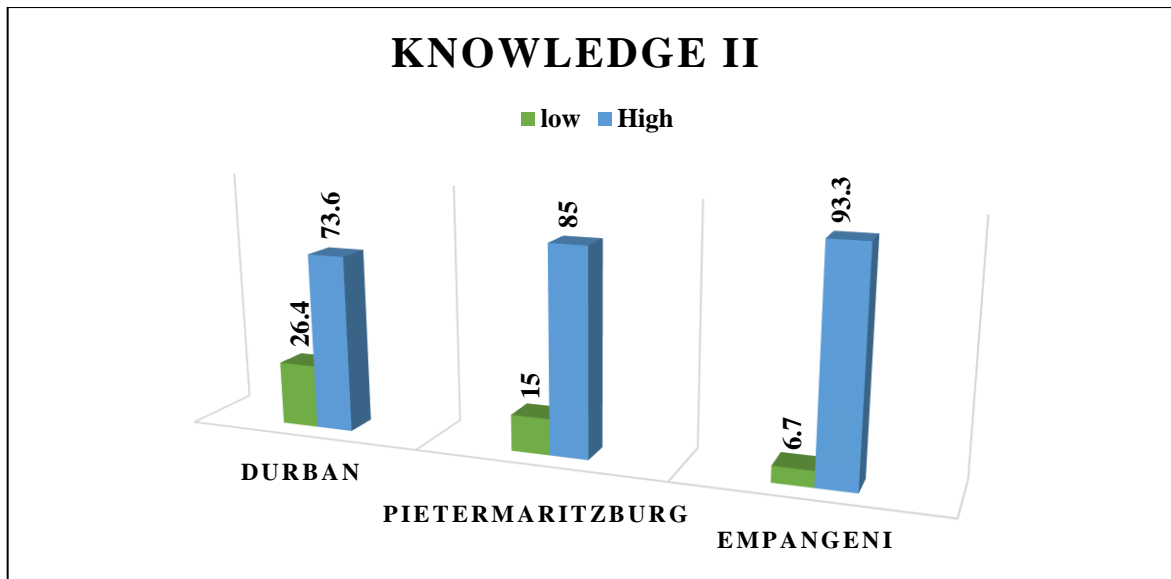
compared to those working with the NGO's and others. Only a few of the public and municipal workers had low knowledge 14.8% (n=17) and 17.6% (n=3) respectively, and most of them had high knowledge 85.2% (n=98) and 82.4% (n=14) respectively. While among those working with others not specified, 75% (n=3) had low knowledge and 25% (n=1) had high knowledge. Those working with the NGO's were the less knowledgeable, with 100% (n=2) having low knowledge. 'Fisher's exact test' showed a significant association; 'Fisher's exact value' =7.58, df = 0, p-value = 0.040.

**Table 4.8: Employment area and knowledge II**

Employment area		Knowledge II				
			Low	High	Total	P Value
	Public clinic	n	17	98	115	0.040
		%	14.8%	85.2%	100.0%	
	Municipal clinic	n	3	14	17	
		%	17.6%	82.4%	100.0%	
	NGO	n	2	0	2	
		%	100.0%	0.0%	100.0%	
	Others	n	1	3	4	
		%	25.0%	75.0%	100.0%	
Total		n	23	115	138	
		%	16.7%	83.3%	100.0%	

#### 4.3.2.3 Influence of study centre on knowledge II

Cross tabulation of the respondents' study centre and knowledge II showed that those at the Empangeni centre are more knowledgeable than the other two centres, with the majority 93.3% (n=42) having high knowledge and only 6.7% (n=3) having low knowledge of PCC. Followed closely by Pietermaritzburg with 85.0% (n=34) and 15.0% (n=6), having high and low knowledge respectively. The Durban group was the least knowledgeable of the three with 73.6% (n=39) and 26.4% (n=14) having high and low knowledge respectively. 'Fisher's exact test' shows a significant association; 'Fishers exact value' = 6.83, df = 0, p-value = **0.029**.



**Figure 4.11: Study centre and knowledge II**

#### **4.4 ATTITUDE TOWARDS PRECONCEPTION CARE**

Attitude towards preconception care services was measured using twelve items on a five-point Likert scale, which ranged from 'strongly disagree' to 'strongly agree'. However, due to a few responses on some options, the scale was reduced to only three options, with the options of 'strongly disagree' and 'disagree' being combined as 'disagree', and 'strongly agree' and 'agree' being combined as 'agree'. The results have been displayed in Table 4.9.

The majority of the respondents 93.5% (n=129) had agreed with the statement that PCC was an important health issue for women of child-bearing age, while only 5.1% (n=7) had disagreed and 1.4% (n=2) had been uncertain. On the other hand, almost an equal number of the respondents (45.7%: n=63) and (42.7%: n=59) had disagreed and agreed with the statement, that a dedicated clinic for PCC was a luxury service, while 11.6% (n=16) had been uncertain about the statement. Almost half of the respondents 49.2% (n=68) had disagreed with the statement, that a hospital setting was the best place to provide PCC, while 37.7% (n=52) had agreed and 13.0% (n=18) had been uncertain. Regarding the statement that in their practice, population planning for pregnancy does not often happen. 47.1% (n=65) had agreed with the statement, 39.8% (n=55) had disagreed and 13.0% (n=18) had been uncertain about this.

The results further showed that more than half of the respondents 52.2% (n=72) had agreed with the statement that PCC was a high priority in their workload, while 31.1% (n=43) had

disagreed and 16.7% (n=23) had been uncertain. Interestingly, a high number 58.7% (n=81) had disagreed with the statement that there was not enough time to provide PCC, 34% (n=47) had agreed and 7.2% (n=10) had been uncertain about it. In the same vein, most of the respondents 47.8% (n=66) had disagreed with the statement, that as PHC nurses they did not have enough skills to offer PCC, while 43.5% (n=60) had agreed and 8.7% (n=12) had been uncertain. Importantly, more than two-thirds of the respondents 82.6% (n=114) had disagreed, that PHC nurses were not the best people to offer PCC, while 9.4% (n=13) had agreed and 8.0% (n=11) had been uncertain about this.

Most of the respondents 84.8% (n=117) had agreed with the statement that they preferred to deal with risk factors before pregnancy rather than in pregnancy, while 10.2% (n=14) had agreed with the statement. The remaining 5.1% (n=7) had been uncertain. More than two-thirds of the respondents 69.6% (n=96) had disagreed with the statement, that initiating the talk about pregnancy wishes was uncomfortable, while 21.7% (n=30) had agreed and 8.7% (n=12) had been uncertain about the statement. Similarly, 57.3% (n=79) had disagreed with the statement that PCC, without women asking for it, was objectionable, while 27.5% (n=38) had agreed and 15.2% (n=21) had been uncertain. Regarding the statement that with PCC they could do something extra for their patients, 82.6% (n=114) had agreed with the statement, 12.3% (n=17) had disagreed and 5.1% (n=7) had been uncertain about this.

**Table 4.9: Attitude towards preconception care**

Variables	Disagree		Uncertain		Agree		Mean
	Freq	%	Freq	%	Freq	%	
PCC is an important health issue for women of child bearing age	7	5.1	2	1.4	129	93.5	4.53
A dedicated clinic for PCC is a luxury service	63	45.7	16	11.6	59	42.7	3.01
A hospital setting is the best place to provide PCC	68	49.2	18	13.0	52	37.7	3.14
In my practice population, planning for pregnancy often does not happen	55	39.8	18	13.0	65	47.1	2.97

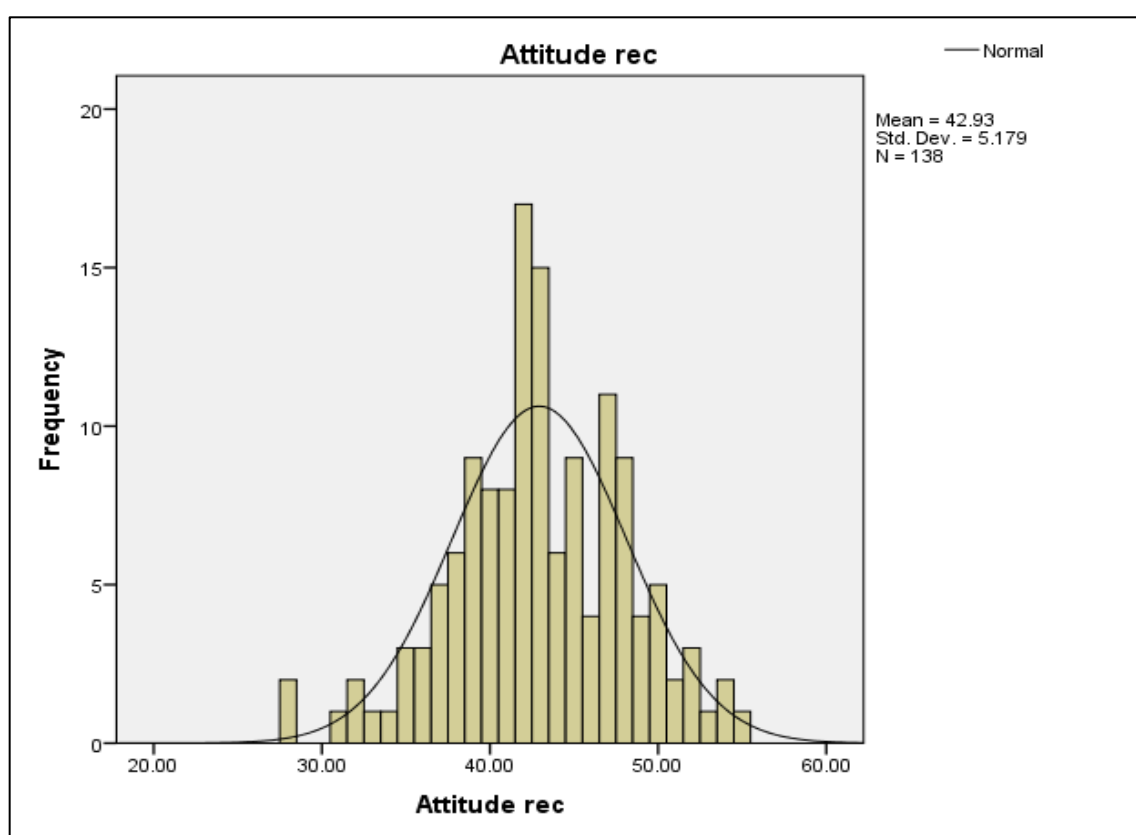
Preconception care is a high priority in my workload	43	31.1	23	16.7	72	52.2	3.33
There is not enough time to provide PCC	81	58.7	10	7.2	47	34	3.32
As a PHC nurse, I do not have enough skills to offer PCC	66	47.8	12	8.7	60	43.5	3.08
PHC nurses are not the best people to offer PCC	114	82.6	11	8.0	13	9.4	4.07
I prefer to deal with risk factors before pregnancy rather than in pregnancy	14	10.2	7	5.1	117	84.8	4.33
Initiating the talk about pregnancy wish is uncomfortable	96	69.6	12	8.7	30	21.7	3.71
PCC without women asking for it is objectionable	79	57.3	21	15.2	38	27.5	3.35
With PCC I can do something extra for my patients	17	12.3	7	5.1	114	82.6	4.09

#### 4.4.1 Overall attitude score

The respondents responded to the attitude questions on a five-point Likert scale, ranging from strongly disagree as a score of one, disagree as two, uncertain as three, agree as four and strongly agree as five for positive statements and reversed in negative statements. This part had twelve items, thus the possible minimum score was 12 and the maximum score was 60. The minimum score for the respondents was 28 and the maximum score was 55. The mean attitude score was 42.9 with a standard deviation of 5.17 (Figure 4.12). Hence on average, the result indicates that the participant has a favourable attitude towards PCC. On grouping of the scores, with a score of less than 35 indicating less favourable attitude and 36-60 indicating more favourable attitude, the majority of respondents 92.8% (n=128) has a more favourable attitude, and 7.2% (n=10) has a less favourable attitude towards PCC (Table 4.10).

**Table 4.10: Grouping of attitude score**

Attitude	Score	n	%
Less favourable	Less than 35	10	7.2
More favourable	36-60	128	92.8
Total	60	138	100.0



**Figure 4.12: Histogram of Attitude Score**

#### **4.5 THE RESPONDENTS' PRACTICES OF PRECONCEPTION CARE**

To assess the nurses' practices of preconception care, the respondents were requested to respond to seven questions to establish their practices of PCC and then asked to indicate the provider, the setting, the type of services given and how many times in the preceding month they had provided PCC services.

The respondents were requested to respond to seven questions to establish their practices of PCC and then asked to indicate the provider, the setting, the type of services given and how many times in the preceding month they had provided PCC services.

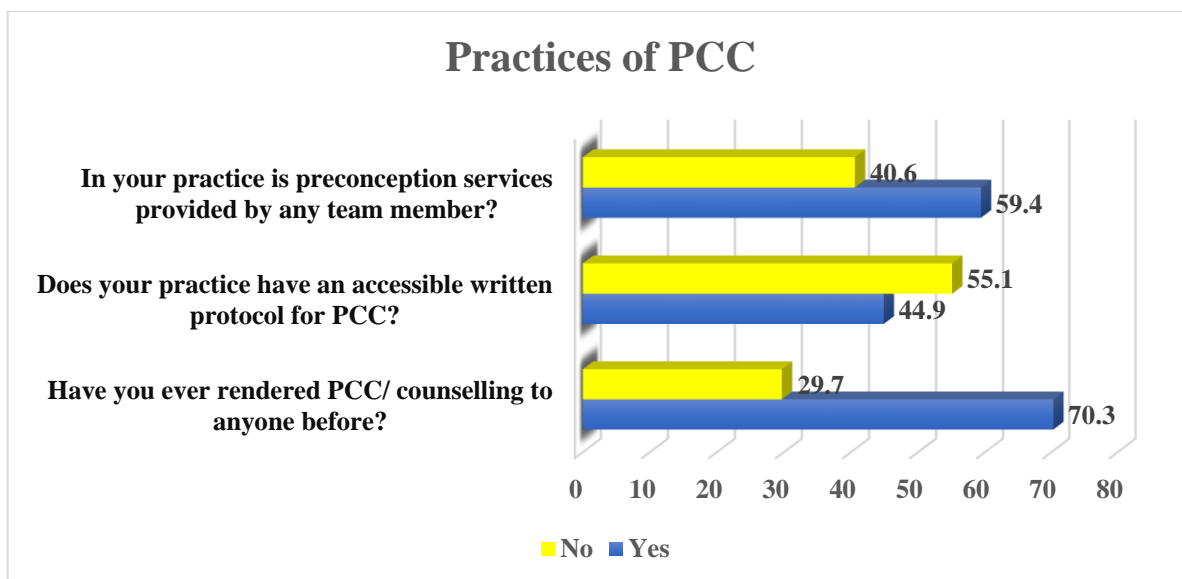
The first three questions were rated as yes or no while in the second three, the respondents are required to choose from a list of options then the last question they are required to write the actual times they have provided PCC in the last month. For analysis purposes, the question of having ever provided PCC to anyone before will be used as practice question and therefore will be compared with the other variables and demographic characteristics.

After analysing the questions in the practice section, the key questions were used to come to a deductive conclusion that PHC nurses are still lacking in practices of PCC since about 29.7% indicated that they have never provided PCC to anyone before and nearly half of the respondents, 47.8% indicated that they did not render PCC services to anyone in the month prior to the study.

The results in Figure 4.13 showed that more than two-thirds of the respondents 70.3% (n=97) indicated 'yes' to the question if they had ever rendered preconception services to anyone before, while 29.7% (n=41) indicated that they had never.

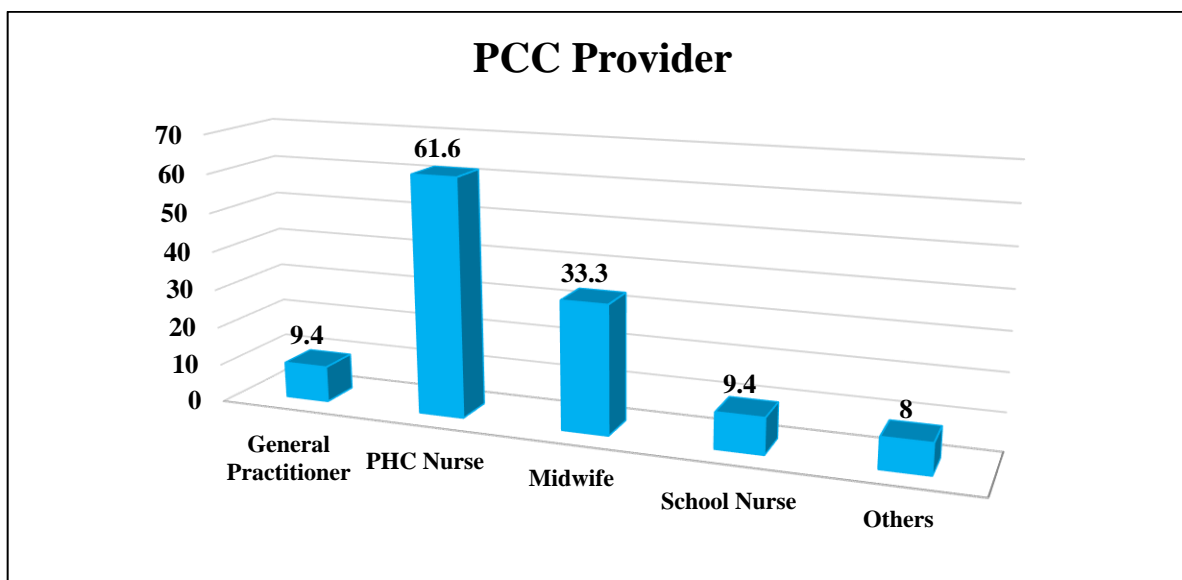
When it involved their practice having had an accessible written protocol for preconception services, only 44.9% (n=62) indicated that they had, while 55.1% (n=76) indicated that they had not had it.

With regards to the question on whether preconception services had been provided by any team member in their practice, most of the respondents 59.4% (n=82) indicated 'yes' while 40.6% (n=56) indicated 'no'.



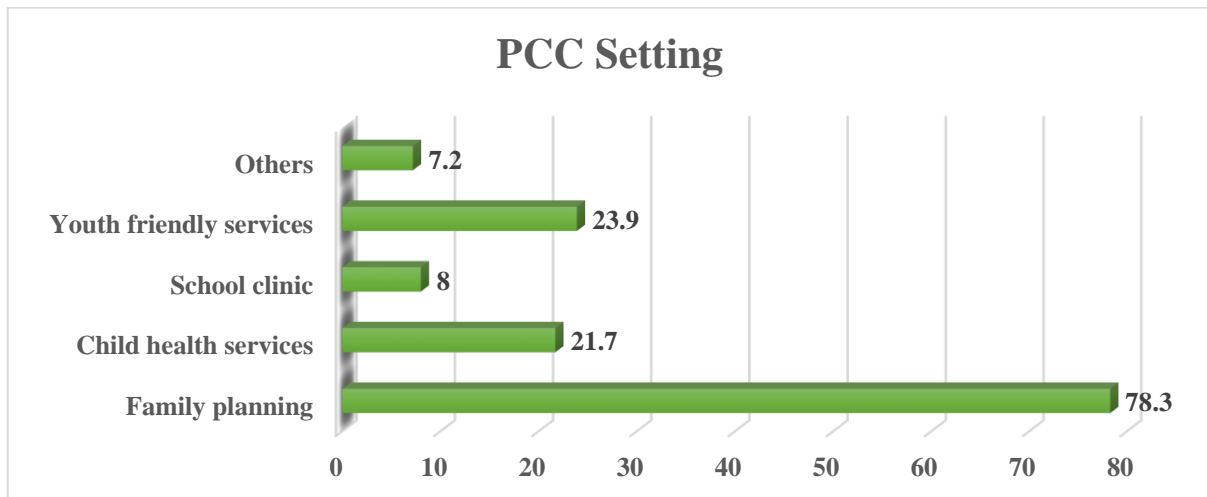
**Figure 4.13: Practices of PCC**

When asked to indicate who in their practice had provided preconception care, the majority of the respondents 97.1% (n=134) indicated at least one person in their practice that had rendered preconception care services, while 2.9% (n=4) indicated no one in their services had. When this question was further analysed as shown in Figure 4.14, 61.6% (n=85) indicated the PHC nurse, 33.3% (n=46) indicated the midwife, 9.4% (n=13) both indicated the general practitioner and the school nurse, while 8.0% (n=11) indicated others.



**Figure 4.14: Provider of PCC**

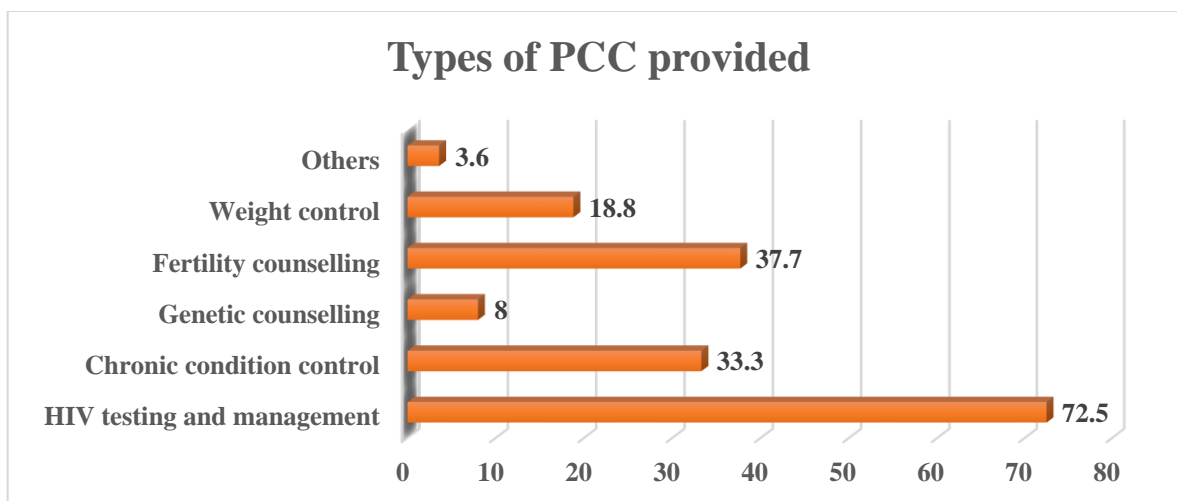
Regarding the type of setting in which preconception care was provided, the majority of the respondents 97.1% (n=134) indicated at least one setting in their practice where preconception care services were rendered, while 2.9% (n=4) indicated that no setting rendered the services in their practice. On further analyses of the question Figure 4.15, most of the respondents 78.3% (n=108) indicated family planning services, 23.9% (n=33) indicated youth-friendly services, 21.7% (n=30) indicated child health services, 8.0% (n=11) indicated school clinics, while 7.2% (n=10) mentioned other settings.



**Figure 4.15: Settings for PCC**

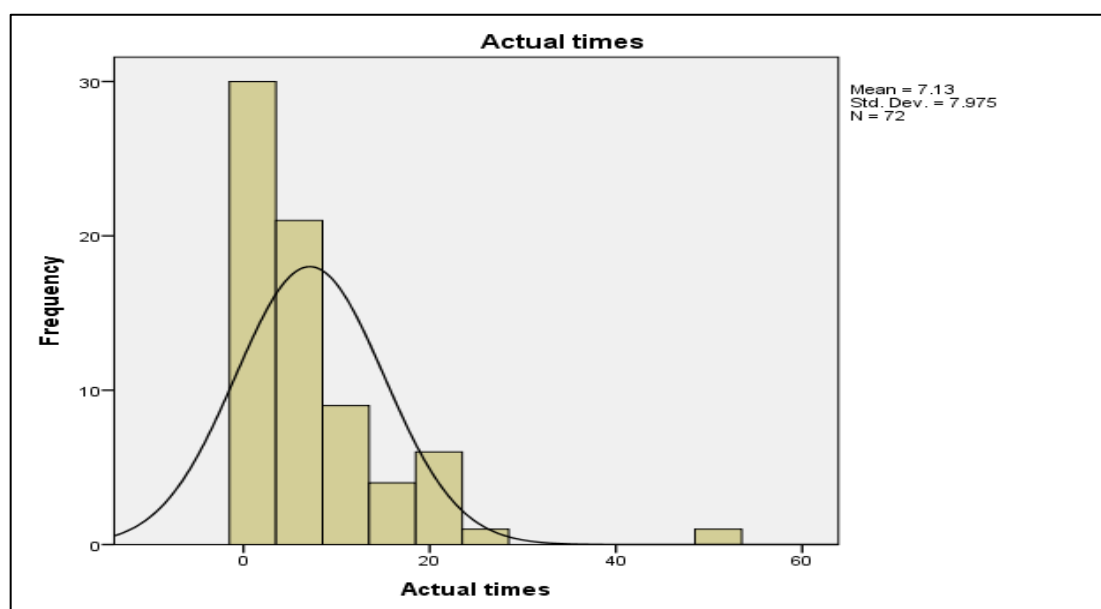
When asked what type of preconception services had been provided in their practice, most of the respondents 97.8% (n=135) indicated at least one type of preconception care rendered in their practice, while 2.2% (n=3) indicated that no type had been rendered in their practice. On further analyses of the question as shown in Figure 4.16 below, the result showed that the clear majority of the respondents 72.5% (n=100) had indicated HIV testing and management, 37.7% (n=52) had indicated fertility counselling, 33.3% (n=46) had indicated chronic condition control, 18.8% (n=26) had indicated weight control, while 8.0% (n=11) had indicated genetic counselling and 3.6% had indicated other forms of services.





**Figure 4.16: Types of PCC provided**

Furthermore, when asked to indicate how many times they had rendered preconception care services in the past month, 52.2% (n=72) indicated that they had not rendered the services, while 47.8% (n=66) indicated that they had not rendered preconception services in the past month. As indicated in figure 4.17 below, for those that had rendered preconception services, the actual time it was rendered ranges from 1 to 50, the mean and standard deviation was 7.13 and  $\pm 7.97$ .



**Figure 4.17: Histogram of Actual times of PCC provision**

### 4.5.1 Influence of age on the practice of PCC

Cross tabulation of the respondents' age and practice PCC shows that those between the ages of 31-40 are more likely to have provided PCC services than any other group. The results displayed in Table 4.11 shows that the majority of respondents 83.1% (n=54) in the age group of 31-40 and a large percentage 69.0% (n=20) in the age group of 41-50 have provided PCC before. On the other hand, only 50.0% (n=16) in the age group of 20-30 and 58.3% (n=7) in the age group of 51 and above have provided PCC before. 'Fisher's exact test' showed a significant association between age and practice of PCC; 'Fishers' exact value'= 12.2, df = 0 and p-value = 0.005.

**Table 4.11: Age and practice**

Age		Practice of PCC				
			Yes	No	Total	P Value
	20-30	n	16	16	32	0.005
		%	50.0%	50.0%	100.0%	
	31-40	n	54	11	65	
		%	83.1%	16.9%	100.0%	
	41-50	n	20	9	29	
		%	69.0%	31.0%	100.0%	
	51 and above	n	7	5	12	
		%	58.3%	41.7%	100.0%	
Total		n	97	41	138	
		%	70.3%	29.7%	100.0%	

### 4.5.2 Influence of availability of protocol on the practice of PCC

The results of the cross tabulation of availability of protocol and practice of PCC Table 4.12 below, revealed that the greater percentage of the respondents 87.8% (n=36) who said that they do not have PCC protocol in their practice have never provided PCC services to anyone before. Only 12.2% (n=5) reported that they had never provided PCC, even with the availability of protocol. Similarly, 58.8% (n=57) of the respondents indicated that they had rendered PCC before and that their practice had an accessible PCC protocol and 41.2% (n=40) indicated that they had provided PCC even without an accessible PCC protocol in their practice. 'Pearson Chi-Square test' shows a significant association; 'Pearson Chi-Square value'= 25.2, df = 1, p-value = 0.000.

**Table 4.12: Practice and availability of protocol**

Practice of PCC	Availability of protocol				
		Yes	No	Total	P Value
Yes	n	57	40	97	0.000
	%	58.8%	41.2%	100.0%	
No	n	5	36	41	
	%	12.2%	87.8%	100.0%	
Total	n	62	76	138	
	%	44.9%	55.1%	100.0%	

#### 4.5.3 Influence of practice of PCC on ever received training about PCC

Cross tabulation was done to determine the relationship between the practice of PCC and training on PCC. Table 4.13 below revealed that the majority 64.9% (n=63) of the respondents who had rendered PCC services before were not trained, while only 35.1% (n=34) of the respondents who were trained indicated to have provided PCC services before. Similarly, the greater percentage 87.8 (n=36) of the respondents who were never trained on PCC had never provided PCC services, while a minority 12.2% (n=5) who were trained for PCC had never provided PCC care to anyone before.

‘Pearson Chi-Square test’ shows a significant association; ‘Pearson value’ = 7.42, df = 1, p-value = 0.007.

**Table 4.13: Practice and training on PCC**

Practice of PCC		Ever received any training on PCC				P Value
			Yes	No	Total	
	Yes	n	34	63	97	<b>0.007</b>
		%	35.1%	64.9%	100.0%	
	No	n	5	36	41	
		%	12.2%	87.8%	100.0%	
	Total	n	39	99	138	
		%	28.3%	71.7%	100.0%	

## **4.6 RELATIONSHIP AND ASSOCIATION BETWEEN SOCIAL-DEMOGRAPHICS, KNOWLEDGE, ATTITUDE, AND PRACTICES**

Non-parametric and parametric tests were performed to examine associations between social-demographics, knowledge, attitude, and practices.

### **4.6.1 Associations between socio-demographic variables and evidence-based practice knowledge, attitude and practices**

‘Mann Whitney U and Kruskal Wallis tests’ were done to test if there were any differences between social demographics, namely age, gender, employment area, study centre, years of experience, and knowledge, attitude and practices of PCC.

‘Kruskal Wallis tests’ were performed for the demographics and practice, knowledge and attitude. The result found an association between knowledge and age,  $p\text{-value} = 0.004$ . With respect to attitude, associations were found between employment area and attitude,  $p\text{-value} = 0.005$ . However, no associations were found between knowledge and gender,  $p\text{-value} = 0.316$ , knowledge and race,  $p\text{-value} = 0.452$ , knowledge and years of experience,  $p\text{-value} = 0.293$ , knowledge and employment area,  $p\text{-value} = 0.171$  and between knowledge and study centre,  $p\text{-value} = 0.144$ . Similarly, no associations were found between attitude and study centre,  $p\text{-value} = 0.657$ , attitude and years of experience,  $p\text{-value} = 0.200$ , attitude and gender,  $p\text{-value} = 0.114$  and attitude and age,  $p\text{-value} = 0.443$ .

‘Mann Whitney U tests’ were performed for practices, knowledge, and attitude. Associations were found between knowledge and attitude,  $p\text{-value} = 0.000$ . Similarly, an association was also found between attitude and practice,  $p\text{-value} = 0.004$ . No associations were found between knowledge and practice,  $p\text{-value} = 0.221$ .

### **4.6.2 Relationships between Knowledge 1 And 11, Attitude and Practice**

A ‘Pearson correlation test’ was run to test the relationship between knowledge, attitude, and practice as shown in Table 4.14 below. There was a meaningful relationship between knowledge 1 and 11 ( $r = .401$ ,  $n=138$ ,  $p=.000$ ). Similarly, a relationship was also found between practice and attitude ( $r=.222$ ,  $n=138$ ,  $p=.009$ ). Others did not show any relationships.

**Table 4.14: Correlation between Knowledge I and II, Attitude and Practice of PCC**

Pearson		Practice	Knowledge 1	Knowledge 11	Attitude
Practice	Correlation	1	-.108	-.135	-.124
	Sig2-tailed		.207	.115	.147
	N	138	138	138	138
Knowledge I	Correlation	-.108	1	.401**	.222**
	Sig2-tailed	.207		.000	.009
	N	138	138	138	138
Knowledge II	Correlation	-.135	.401**	1	.100
	Sig2-tailed	.115	.000		.243
	N	138	138	138	138
Attitude	Correlation	-.124	.222**	.100	1
	Sig2-tailed	.147	.009	.243	
	N	138	138	138	138

\*\* . Correlation is significant at the 0.01 level (2-tailed).

#### 4.7 PERCEIVED FACILITATORS TO PRECONCEPTION CARE

Perceived facilitators to preconception care were measured by requesting respondents to respond to various suggestions. The first part was about training and the second part on other perceived facilitators with seven items on a five-point Likert scale, ranging from ‘strongly disagree’ to ‘strongly agree’. For analysis purposes, the ‘strongly agree’ and ‘agree’ options were combined as ‘agree’ and ‘strongly disagree’ and ‘disagree’ were combined as ‘disagree’ due to low observations in some of the categories.

When respondents were asked whether they had ever received any training on PCC within a general or specific course, the result in Table 4.15 below revealed that more than two-thirds of the respondents 71.7% (n=99) had indicated ‘no’ and 28.3% (n=39) had indicated ‘yes’.

**Table 4.15: Training on PCC**

Items	Yes		No	
	Freq	%	Freq.	%
Have you ever received any training on PCC within a general or specific course?	39	28.3	99	71.7

When further asked if the current training was useful for PCC, the results as in Table 4.16 revealed that most of the respondents 31.9% (n=44) had indicated that the current training was neither useful nor useless, 29.7% (n=41) had indicated very useful, 15.9% (n=22) had indicated of little use, 14.5% (n=20) had indicated quite useful and 7.2% (n=10) had indicated not at all useful.

**Table 4.16: Usefulness of current training to PCC**

Variables	Very Useful		Quite Useful		Neither		Of Little Use		Not at all useful	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
How useful is your current training for PCC?	41	29.7	20	14.5	44	31.9	22	15.9	10	7.2

Table 4.17 below revealed that the majority of respondents 73.9% (n=102) had agreed that evidence of effectiveness would enable rendering of PCC. Only 6.5% (n=9) had disagreed and 16.7 % (n=23) had been uncertain. Similarly, the majority 78.3% (n=108) had agreed that background knowledge and training would facilitate PCC. Only 3.6% (n=5) had disagreed and 15.2% (n=21) had remained uncertain. Similarly, 69.6% (n=96) had agreed that more staff and time would act as a facilitator. A few respondents 12.3 % (n=17) had disagreed and 15.2 % (n=21) had remained uncertain.

More than two-thirds of the respondents 80.5% (n=111) had agreed that more promotion of PCC would facilitate it. Only 3.6% (n=5) had disagreed and 13.0% (n=18) had been uncertain. Most of the respondents 65.9% (n=91) had agreed that adequate reimbursement would facilitate PCC. Only 10.9% (n=15) had disagreed and 20.3% (n=28) had remained uncertain. Similarly, 74.7% (n=103) had agreed that adequate resources for PCC would act as a facilitator. A few respondents 10.1 % (n=14) had disagreed and 12.3 % (n=17) had remained uncertain. A further majority 79.7% (n=110) had agreed that PCC guidelines, policy or reminder would facilitate PCC. Only 5.8% (n=8) had disagreed and 11.6% (n=16) had been uncertain.

**Table 4.17: Facilitators of PCC**

Variables	Disagree		Uncertain		Agree		Mean
	Freq	%	Freq	%	Freq	%	
Evidence of effectiveness	9	6.5	23	16.7	102	73.9	3.93
Background knowledge and training	5	3.6	21	15.2	108	78.3	4.03
More staff/ time	17	12.3	21	15.2	96	69.6	3.78
More promotion of PCC	5	3.6	18	13.0	111	80.5	4.13
Adequate reimbursement	15	10.9	28	20.3	91	65.9	3.81
Adequate resources for PCC	14	10.1	17	12.3	103	74.7	3.98
PCC guidelines, policy or reminder	8	5.8	16	11.6	110	79.7	4.13

#### **4.7.1 Influence of employment area on training on PCC**

Cross tabulation was done to determine the relationship between the employment area and never received training on PCC. The results displayed in Table 4.18 Showed that nurses employed in the other clinics not specified were more likely to have received training on PCC, compared to the rest of the categories, as 75.0% (n=3) indicated that they were trained on PCC, while 25.0% (n=1) indicated that they were not trained. Nurses from the municipal clinics also followed with 58.8% (n=10), indicated that they had received training and only 41.2% (n=7) had never received any PCC training. Nurses in the public clinics were the least in terms of training with only a minority 22.6% (n=26) of the nurses had received training on PCC, while 77.4% (n=89) had never received any training. None of the nurses working with

the NGO's had ever received any training on PCC. 'Fisher's exact test' shows a significant association; 'Fisher's exact value'= 13.08, df = 0, p-value = 0.002.

**Table 4.18: Employment area and training on PCC**

Employment area		Ever received any training on PCC				
			Yes	No	Total	P Value
	Public clinic	n	26	89	115	0.002
		%	22.6%	77.4%	100.0%	
	Municipal clinic	n	10	7	17	
		%	58.8%	41.2%	100.0%	
	NGO	n	0	2	2	
		%	0.0%	100.0%	100.0%	
	Others	n	3	1	4	
		%	75.0%	25.0%	100.0%	
Total		n	39	99	138	
		%	28.3%	71.7%	100.0%	

#### 4.7.2 Influence of study centre on training about PCC

A cross tabulation was done to determine the relationship between the study centre and receiving training on PCC. The results displayed in Table 4.19 showed that although the majority 54.7% (n=29) of the people in the Durban group were untrained, yet they are the most trained of the three categories, with 45.3% (n=24) untrained. Among those from the Pietermaritzburg group only 20.0% (n=8) were trained, while 80.0% (n=32) were untrained and among the Empangeni group, 84.4% (n=38) were not trained, while only 15.6% (n=7) were trained for PCC. 'Pearson Chi-Square test' shows a significant association; 'Pearson value'= 12.5, df = 2, p-value = 0.002.



**Table 4.19: Study centre and training on PCC**

Study centre		Ever received any training on PCC				
			Yes	No	Total	P Value
	Durban	n	24	29	53	0.002
		%	45.3%	54.7%	100.0%	
	Pietermaritzburg	n	8	32	40	
		%	20.0%	80.0%	100.0%	
	Empangeni	n	7	38	45	
		%	15.6%	84.4%	100.0%	
Total		n	39	99	138	
		%	28.3%	71.7%	100.0%	

#### 4.8 PERCEIVED BARRIERS TO PRECONCEPTION CARE

To identify the barriers to PCC, the respondents were asked to respond to various statements. The responses were based on a five-point Likert scale ranging from ‘strongly disagree’ to ‘strongly agree’. For analysis purposes, the options of ‘strongly agree’ and ‘agree’ were combined as ‘agree’ and ‘strongly disagree’ and ‘disagree’ were combined as ‘disagree’ due to low observations on some of the categories.

Table 4.20 below revealed that just over two-thirds of the respondents, 76.1% (n=105) had agreed with the statement that the lack of support from staff and government acted as a barrier to PCC, while 15.9% (n=22) had disagreed and 8.0% (n=11) had been uncertain. In the same vein, the majority of the respondents 69.6% (n=96) had agreed with the statement that unco-operative patients, while 21.7 (n=30) had disagreed and 8.7% (n=12) had been uncertain. For the item on lack of training and skills as a barrier, 83.3 % (n=115) had agreed, 13.8% (n=19) had disagreed, while 2.9% (n=4) had been uncertain. However, for patients not demanding PCC as a barrier, the majority of the respondents 56.6% (n=78) had agreed, while 32.6% (n=45) had agreed and the remaining 10.9% (n=15) had been uncertain.

**Table 4.20: Barriers to PCC**

Variables	Disagree		Uncertain		Agree		Mean
	Freq	%	Freq	%	Freq	%	
Lack of support from staff/ government	22	15.9	11	8.0	105	76.1	3.80
Uncooperative patient	30	21.7	12	8.7	96	69.6	3.67
Lack of training/ skills	19	13.8	4	2.9	115	83.3	4.02
Patients not demanding PCC	45	32.6	15	10.9	78	56.6	3.35

#### 4.9 SUMMARY OF THE CHAPTER

This chapter presented the findings of a study aimed at exploring and describing the knowledge, attitude and practice of primary health care students regarding preconception care in a selected higher education institute in the eThekweni District. The findings indicated that the majority of the respondents were female, middle-aged and of low work experience. The majority of the respondents had not received any form of training on preconception care. However, most of the nurses had rendered preconception care services before, but only a few had provided it recently.

The respondents had a good knowledge of preconception interventions and a favourable attitude towards it. Some demographic variables were revealed to influence the knowledge, attitude, and practices of the study respondents. The study also highlighted some facilitators and barriers to the provision of preconception care.

The next chapter will present the discussion, recommendation, and conclusion of the study findings.

## **CHAPTER FIVE**

### **DISCUSSION OF THE STUDY, RECOMMENDATIONS, AND CONCLUSION**

#### **5.1 INTRODUCTION**

The prior chapter presented the findings to the study whose aim was to explore and describe the knowledge, attitude, and practice of primary health care students regarding preconception care in a selected higher education institute in the eThekweni District. This chapter will go further to discuss the findings of the main concept in the study in relation to literature. The chapter will present some recommendations from the findings of the study and also discuss the limitations of the study.

#### **5.2 SOCIAL-DEMOGRAPHIC FINDINGS**

The response rate for the present study is remarkably 85%, compared to previous studies from the Netherlands and the United Kingdom that had low response rates of 34% and 60.1% respectively (van Voorst et al., 2016; Heyes et al., 2004) and almost comparable with that from the USA with a 77% response rate from nurses (Williams et al., 2006). The study revealed that the majority of the respondents 70.3% were not older than 41 years. Thus, the population was similar to previous studies done in Qatar, Brazil, and USA (Alali et al., 2016; Ferreira et al., 2015; Williams et al., 2006), but younger than the population in the study conducted in Sweden (Stern et al., 2015).

The majority of the respondents 83.3% in the present study were females, which is also consistent with previous studies (van Voorst et al., 2016; Ferreira et al., 2015; Williams et al., 2006). This is also because nursing is mainly dominated by females. The result of this study regarding the race of the respondents showed that most of them 92.8% were Black. The results further showed that most of the respondents 89.9% were Christians. Regarding marital status, the result showed that a greater percentage 58.7% were single, contrary to that of (Alali et al., 2016). The findings of the present study further revealed that the biggest group of the respondents 80.4% had practised as a PHC nurse for between 1-5 years, which was similar to the study by Ferreira et al. (2015).

The result of this study regarding the area of employment of the respondents showed that most of them 83.3% worked in the public clinics, which was similar to the population in the study by (Stern et al., 2015). The results further revealed that most of the respondents 38.9% had studied in the Durban center, which is an urban area.

### **5.3 KNOWLEDGE OF PRECONCEPTION CARE**

Studies have reported conflicting views about nurses and primary health care workers' knowledge of preconception care. Several studies have revealed a low level of knowledge regarding PCC services Bortolus et al. (2017), Braspenningx et al. (2013), Ojukwu et al. (2016) and Coll et al. (2016), while Williams et al. (2006) reported that health care workers had a high knowledge regarding specific PCC interventions. However, the results of the present study portrayed that most of the respondents 55.1% were highly knowledgeable about PCC.

The results revealed that most of the respondents were knowledgeable about the general preconception care, with a minimum score of 28 and maximum of 50 out of a possible 60 in knowledge I and a minimum of 58 and maximum of 90 in knowledge II. The results also showed that the mean score and standard deviation for knowledge II were 83.33 and  $\pm 7.38$  respectively. These results are in line with previous literature on PCC by Sattarzadeh et al. (2017) with a mean score of 73.21 and  $\pm 11.83$ .

According to WHO, the ultimate aim of PCC is for short and long-term improvement in maternal and child health outcomes (Dean et al., 2014a; World Health Organization, 2013b). The results of this study found that a great percentage of the respondents 88.4% agreed that PCC could lead to better pregnancy outcomes. This was consistent with the study by van Voorst et al. (2016) where the majority of the midwives agreed that PCC can lead to better pregnancy outcomes. Similarly, most of the respondents 68.1% disagreed that the risk profile of their patients will not change after PCC. Correspondingly, this was also consistent with the study by van Voorst et al. (2016), where the majority of the midwives had disagreed with the same statement.

PCC should be provided to all reproductive-aged women irrespective of their risk profile, but those with a high-risk profile should not be neglected (Kachoria and Oza-Frank, 2014). Therefore, the majority 81.2% of the study respondents had disagreed that PCC should only be offered to women with high risks. Likewise, van Voorst et al. (2016) reported that more

than 80% of the midwives had disagreed with the same statement. The results of this study showed that 92% of the respondents were in agreement with the statement that PCC could reduce the incidences of unplanned and unwanted pregnancy. The findings of this study echoed the findings of (Rahangdale et al., 2014; Dean et al., 2014b).

WHO has recommended that PCC can make a useful input in optimizing the health of mother and child, thereby reducing maternal and child mortality and morbidity both in high and low-income countries (World Health Organization, 2013b). Similarly, the present study found that 92.8% had agreed that PCC could reduce the maternal and child mortality rate. PCC is for all women of child-bearing age (Kachoria and Oza-Frank, 2014). In the same vein, a greater percentage of the respondents 89.9% of the present study agreed that PCC is for all women of child-bearing age. WHO also recommended PCC for both men and women who are contemplating pregnancy and those who are not, and also for marginalized and vulnerable groups, including adolescent girls and women with previous adverse pregnancy outcomes be given PCC (World Health Organization, 2013b).

Shawe et al. (2015) and Kachoria and Oza-Frank (2014) observed that in many countries, preconception guidance was usually contained within the pregnancy guidelines. Not surprisingly, 44.9% had been uncertain and 39.2% had disagreed that there was no PCC policy in South Africa. This is because currently South Africa does not have a PCC policy, but has some guidance in its maternity guidelines (NDoH, 2015).

Testing and the management of HIV, especially for the prevention of vertical and horizontal transmission is one component of PCC services (World Health Organization, 2013b; Hoyt et al., 2012). Similarly, most of the respondents 84.1% had also agreed that PCC could reduce the incidence of HIV PCR positive. More than two-thirds of the study respondents 71.8% had agreed that PCC could reduce the chances of acquiring HIV among serodiscordant couples. This is consistent with the observation of (Moodley, Moodley, Sebitloane, Maharaj and Sartorius, 2016; Hoyt et al., 2012). It is also consistent with the recommendations about the goal of PCC in serodiscordant relationships according to (Zühlke and Acquah, 2016). Interestingly, the findings of this research show that more than a quarter of the respondents 42.8% had agreed, that there was little evidence base for PCC. This is contrary to the findings of Goodfellow (2015), who observed that there is a wide range of available PCC interventions with evidence of effectiveness, although some are with a more stronger evidence base than others.

Although, knowledge among healthcare worker on implementations and protocols about PCC interventions have been reported to be low (Coll et al., 2016; Ferreira et al., 2015), their general knowledge about advice and screenings required during preconception services were not (Williams et al., 2006).

The majority of the study respondents indicated that certain advice given during preconception counselling were important for reproductive-aged women. This included advice on: smoking 91.3%; drug use 92.1%; weight control 95%; exercise 94.2%; alcohol 90.6%; diet 96.4%; maternity care 97.8%; genetic counselling 97.1%; inherited disorder 94.9%; chronic diseases 99.3%; folic acid 94.9%; and occupational hazards 91.3%. Similarly, the majority of the respondents had further indicated that certain screening was important for women of child-bearing age. This included screening for: rubella 91.3%; HIV 99.3%; cervical cytology 99.3%; hepatitis 98.6%; genital infections 99.3%; nutritional status 99.3%. This was also consistent with the findings of Heyes et al. (2004), where respondents had also indicated this advice as important. This area also revealed some aspect of their belief and attitude towards PCC.

#### **5.4 ATTITUDE TOWARDS PRECONCEPTION CARE**

The results showed that most of the respondents had favorable attitudes towards preconception care, with a minimum score of 29 of a possible 50. These results were in line with most of the previous literature on PCC (Klein et al., 2017; van Voorst et al., 2016). Other studies also reported a positive attitude towards PCC, both among health care workers and women (Ahmed, Elbashir, Ibrahim, Mohamed and Alawad, 2015; Posner et al., 2006) where 98% believed in the health benefits of PCC on pregnancy outcomes.

Several authors on PCC indicated that PCC was very important for all women of child-bearing age (Phipps, 2016; World Health Organization, 2013b). Similarly, in the present study, 93.5% had agreed that PCC was an important health issue for women of child-bearing age. Some authors on PCC made recommendations for the establishment of a special PCC clinic (Poels et al., 2017). A dedicated PCC clinic was established in some countries like the Netherlands, Hungary and the United Kingdom Boulet et al. (2006), for the provision of PCC, but this is not a norm in Africa, as some African countries like South Africa have opted for the integration of PCC services into already existing care (NDoH, 2015). However, in the

present study most of the respondents, 45.7 had also disagreed that a dedicated clinic for PCC was a luxury service for women.

PCC services can be rendered in a variety of settings. In the hospital settings, it has been recommended to be in the form of an opportunistic offer to every reproductive-aged woman encountered by the health care provider. Nevertheless, the primary health care setting has been suggested to be the most suitable setting for these services (Poels et al., 2017; Shannon et al., 2014). Similarly, almost half of the respondents 49.2% had disagreed that the hospital setting was the best place to provide PCC. Globally, pregnancy planning hardly happens among the general population World Health Organization (2014), likewise, the unintended pregnancy rate in sub-Saharan Africa is higher than in the developed countries (Singh, Sedgh and Hussain, 2010). Not surprisingly, in the present study 47.1 % had agreed that in their practice population, planning for pregnancy did not always happen.

Studies have proved the importance of PCC provision for the improvement of pregnancy outcomes and the reduction in maternal and child mortality and morbidity (Beckmann et al., 2014; World Health Organization, 2012). The findings of this study also showed that the majority of the respondents 52.2% had indicated, that PCC was a high priority in their workload. Time has been cited in many studies as a major barrier to the provision of preconception services (Ojukwu et al., 2016; Coll et al., 2016; Mazza et al., 2013). It is noteworthy and surprising that about 58.7% of the respondents in the present study had disagreed, that there was not enough time for the provision of PCC.

Even though 71.7 % of the present study respondents indicated that they had never received any form of training on PCC, yet 47.8% had disagreed that as a PHC nurse they did not have enough skills to offer PCC. This showed that the respondents believed that they could provide the preconception care services with or without training. Furthermore, a greater percentage 82.6% had also disagreed that PHC nurses were not the best people to offer PCC. Studies have shown some degree of confusion about whose role it is to provide PCC (Bortolus et al., 2017; van Voorst et al., 2016; Stephenson et al., 2014).

The majority of the study respondents 84.8% had agreed that they preferred to deal with risk factors before pregnancy rather than during pregnancy. This was consistent with the recommendations by WHO and the result of van Voorst et al. (2016), which showed that almost the same percentage of midwives were of the same opinion. In contrast, in the present

study, more than two-thirds of the respondents 69.6% had disagreed that initiating talk about pregnancy wishes was uncomfortable and 57.3% had disagreed that PCC without women asking for it, was unpleasant. This contrasted with the findings by Coll et al. (2016), where it was revealed that providers shied away from talking about pregnancy desires with patients, except if they initiated it themselves. Although in agreement with the findings by van Voorst et al. (2016), who revealed that a big percentage of respondents saw, raising of the topic about patients pregnancy wishes, not a barrier to PCC.

The greater percentage of the respondents 82.5% had agreed that with PCC they could do something extra for their patients. This was consistent with the findings amongst midwives by van Voorst et al. (2016), and also echoed the results of Stephenson et al. (2014), who suggested that PCC interventions to the general public would be an advantage, not only to those with high risk conditions, but would help in addressing vital health disparities regarding risky health behaviours.

## **5.5 PRACTICES OF PRECONCEPTION CARE**

Previous studies have indicated that although primary health care workers had a favourable attitude towards PCC, its implementation was generally low and should be improved (Braspenningx et al., 2013). Provision of PCC services was often a neglected area in the presence of other competing preventive services Mazza et al. (2013), which meant that many girls were pushed into womanhood without any preventive health care services (Dean et al., 2014a). The present study revealed that the PHC nurses generally lack the practice of PCC, although the majority indicated that they had rendered the services before, the majority of the respondents indicated that they had not rendered PCC services in the month prior to the study.

The results of this study revealed that 70.3% of the study respondents indicated that they had rendered preconception care to somebody before. This was not surprising because there was no time range or scope to access the level of care given. Availability, awareness, and utilisation of written protocols on preconception care was seen as a challenge in previous studies (Coll et al., 2016; Ferreira et al., 2015). More than half of the study respondents 55.1% indicated that their practice did not have an accessible written protocol for PCC. There has always been some confusion about whose role it is to render PCC services (Bortolus et al., 2017; van Voorst et al., 2016; Stephenson et al., 2014), though most of the respondents, 59.4% in the present study indicated that PCC was being provided by a team member in their practice.



Furthermore, about 97.1% of the respondents indicated at least one person in their practice that had rendered PCC services, however, when this question was further scrutinized, the result showed that most of the respondents 61.6% had indicated the PHC nurse as the provider, followed by the midwife 33.3%. The findings of the present study were consistent with that of Mazza et al. (2013) among general practitioners, who indicated that they were not best suited for preconception services as women hardly presented at the preconception period however, they suggested as one of the strategies to improve its delivery, the need to consider the role clinical nurses have to play. The findings were contrary to the findings of Heyes et al. (2004) where 79.8% indicated the general practitioner and 58.6% indicated practice nurse and 39.4% mentioned midwives.

There have been several recommendations about the possible settings for the provision of PCC services, but the primary care setting has been indicated as the best place for the provision of PCC (Hussein et al., 2016). In the present study, about 97.1% of the respondents indicated at least one setting where PCC services were rendered, however, the family planning clinic setting was the most famous with 78.3%, followed by youth-friendly clinics at 23.9%. This is consistent with the recommendation that the family planning setting could play a valuable role in the provision of PCC for low-income women (Bronstein et al., 2012). This did not corroborate the findings by Heyes et al. (2004), which showed that the majority of respondents indicated that it had been provided opportunistically, while only 10.4% revealed that it had been provided in the family planning clinics.

Several preconception services can be rendered to women of reproductive age based on their needs (World Health Organization, 2013b). The result from the present studies revealed that among those who responded, the favourite type of PCC provided by the respondents was HIV testing and management 72.5%, followed by fertility counselling 37.7%.

According to previous studies, the provision of PCC services by health care workers had been low (van Voorst et al., 2016; Chuang et al., 2012). The findings of the present study revealed that the majority of the respondents 52.2% indicated, that they had not rendered PCC services in the past month. This is consistent with the findings by van Voorst et al. (2016) which revealed that only a small percentage of primary care givers had provided preconception consultation two months prior to the study. The minimum score was one while the maximum score was 50.

## **5.6 RELATIONSHIP AND ASSOCIATION BETWEEN SOCIAL-DEMOGRAPHICS, KNOWLEDGE, ATTITUDE, AND PRACTICES**

When association tests between various demographic variables and practice, knowledge and attitude were done, 'Fisher's exact test', 'Pearson's chi-square', 'Kruskal Wallis and Mann Whitney tests' showed contradictory results in some of the variables. 'Fisher's exact test' showed an association between age and practice, while the 'Kruskal Wallis and Mann-Whitney test' showed no association. 'Fisher's exact' showed association between practice, age, and availability of protocol, while the 'Kruskal test' showed no association. Furthermore, 'Fisher's exact' showed no association between attitude, knowledge, employment area, practice and between knowledge and age, while the 'Man-Whitney' showed a significant relationship between attitude, knowledge and practice and the 'Kruskal Wallis test' showed a significant relationship between knowledge and age and between attitude and employment area. Similarly, 'Fisher's exact' and 'Pearson chi-square' showed an association between the training and employment area, study centre, provision of PCC and also between the employment area, the availability of protocol and knowledge, while the results of the 'Kruskal test' and 'Man-Whitney' showed no association.

The results of the Pearson's correlation that found no significant relationship between knowledge and practice was consistent with the study by Sattarzadeh et al. (2017), where no significant relationship was found between knowledge and practice ( $P = 0.133$ ,  $r = 0.238$ ).

The result of the present study reveals no association between knowledge and training thus in contrast with studies by Sattarzadeh et al. (2017), where a significant relationship was revealed between knowledge and education level. No association was found between knowledge and years of practice in the present study, and this is consistent with the previous study where no relationship was also found (Bahri, Iliati, Sajjadi, Boloochi and Bahri, 2012).

The precede / proceed model, which was adapted for the study also revealed that the demographic characteristics also affected both the predisposing factors, which are the knowledge, attitude and practice. It also affects the enabling factor which is the skills, training, protocols, resources, and others. The results of the present study, however, revealed some significant associations between age and practice, availability of protocol and practice, knowledge and employment area, knowledge and availability of protocol, employment area and knowledge, study centre and knowledge, employment area and training, study centre and

training, practice and training. It further reveals the difference between age and knowledge, employment area and attitude, knowledge and attitude and knowledge and practice. This shows that both the predisposing factor, the enabling factor, the reinforcing factor and the demographic factors are connected, related and interlinked with each other and all affect the provision of PCC. This is consistent with the previous studies that revealed that practice is influenced by both the predisposing, enabling and reinforcing factors (Chaffee et al., 2000).

## **5.7 FACILITATORS OF PRECONCEPTION CARE**

The training and education of health care providers, especially primary care providers on PCC have been suggested, as one of the enablers to the provision and uptake of PCC services (Poels et al., 2017; Delvoye et al., 2009). Nevertheless, the findings of the present studies revealed that most of the respondents 71.7% indicated, that they had never received any training, be it general or specific training on PCC. From the recommendation from previous studies, adequate training of health care workers is necessary to increase their knowledge and awareness of PCC and thereby improve the practices (van Heesch, de Weerd, Kotey and Steegers, 2006). Furthermore, the majority of the respondents 31.9% indicated, that their current training had not been useful for the provision of PCC. Similarly, Delvoye et al. (2009) recommended that for effective implementation of PCC services to occur, its components should be incorporated into the nursing and medical curriculum.

Findings showed that the respondents who responded to these questions regarded all the items on the questionnaire pertaining to facilitators, as factors that would promote PCC. The ranking of the items showed that the nurses considered more the promotion of PCC, as the most important facilitator to provision and uptake of PCC, as 80.5% agreed with this suggestion. Similarly, Poels et al. (2017) and Goodfellow (2015) recommended the launch of a promotional campaign to create awareness of the availability of PCC services to the general public, especially among the target group. The respondents also ranked the availability of the PCC guidelines, policy or reminder, as a major facilitator to PCC with 79.7% agreeing to this option. This echoes the findings and recommendations of previous studies by (Poels et al., 2017; Eslami et al., 2013). Mazza et al. (2013) and Braspenningx et al. (2013) also recommended for the availability of the preconception checklist, which will ensure that all the PCC guidelines are followed, as one of the enablers to the provision of PCC. Similarly, 78.3% of the respondents also agreed that the background knowledge and training on PCC would act as a facilitator, which is also in line with the recommendations of Poels et al. (2017),

who observed that only a few health care workers had received some form of education and training on PCC and therefore suggested investments in the training of health care providers to increase their knowledge of PCC.

Several studies have pointed out the importance of adequate tools and guidelines for the provision of PCC and that the provision of resources would be very useful and time efficient when preparing for PCC (Poels et al., 2017; Mazza et al., 2013). Resources such as educational DVD's for the patients and RLP tools have been indicated to be very effective for preconception services (Hamill, McCance, Deery, Patterson, Alderdice, Spence et al., 2014; Stern et al., 2013). The majority of respondents 74.7% had agreed that adequate resources were also an important facilitator to PCC. Similarly, 73.9% of the respondents had agreed that evidence of PCC effectiveness would also act as a facilitator, which is also in line with the recommendations of Mazza et al. (2013) and Poels et al. (2017), who suggested waiting-room posters for patients, which will highlight the usefulness of PCC and more education for healthcare providers on the benefits of PCC. More time and staff were also considered to be important facilitators for the provision of PCC with 69.6% agreeing to the option. This is also in line with Poels et al. (2017) where some shared responsibilities between healthcare providers was suggested as a facilitator to PCC. A further 65.9% of the respondents also agreed that adequate remuneration would act as a facilitator to the provision of PCC. Similarly, Sijpkens et al. (2016) and Poels et al. (2017) indicated that the exploration of health insurance coverage of the cost of PCC services will facilitate its uptake.

## **5.8 BARRIERS TO PRECONCEPTION CARE**

Sijpkens et al. (2016) and Poels et al. (2017) purported, that PCC was more likely to occur where there was adequate training and education of health care providers about the concept, as only a few professionals seemed to be familiar with the concept. It is therefore not surprising that the majority of the respondents in this study 83.3% considered the lack of training and PCC skills as the biggest barriers to the provision of PCC. The results further showed that the other major barriers were a lack of support from staff and government 76.1% and uncooperative patients 69.6%. Similarly, findings from Mazza et al. (2013) showed that women not co-operating and presenting at the preconception period, acted as a barrier to its provision, while Sijpkens et al. (2016) advocated for an increased collaboration amongst professionals. The lack of demand for PCC by the patients was also seen as a barrier with 56.6% of the respondents agreeing to it. This was also in line with the findings of Klein et al.

(2017), which revealed more at-risk women not demanding PCC because they perceived discouragement of their pregnancy by health care providers. Similarly, findings by (Matthews et al. (2012)) revealed that many people living with HIV found it difficult to demand PCC due to non-disclosure of status.

## **5.9 RECOMMENDATIONS**

In line with the results of the study, the following recommendations are made for nursing practice, education, management, and research.

### **5.9.1 Nursing Practice**

- The present study demonstrated that the main facilitator to the provision of PCC services is background knowledge and training. There is, therefore, the need to provide ongoing in-service education and guidance to nurses for the effective implementation and incorporation of PCC services into routine practice.
- Proper measures need to be instituted in the practice area to ensure the enhancement of knowledge and awareness, such as the provision of guidelines, policy, reminders, and checklists to ensure that nurses are guided.
- There is the need for increased educational campaigns targeting at-risk individuals in the practice areas for the improvement in pregnancy outcomes.

### **5.9.2 Nursing Education**

- There is the need for educators to integrate the concept of PCC services into the curriculum for basic nurses' training to ensure that the basics are well understood.
- There is the need for PCC interventions to be made a basic component of PHC students' training and for the continuous upgrading of skills.

### **5.9.3 Nursing Management**

- Nurse managers should assist with the provision of adequate opportunity for the continuous professional development and education upgrade.
- Provision of on-going, in-service education, conferences and seminars to train and update nurses on the latest skills needed for preconception services.
- Provision of the adequate resources such as policy, guidelines, protocols, and checklists, as well as other equipment that is required for the proper provision of

preconception interventions, as adequate resources were identified as a facilitator to PCC by respondents of this study.

- Provision of adequate educational resources for patients such as DVD's.
- Nurse managers should advocate for more campaigns and promotion of the concept to all the stakeholders involved and also rally for its coverage by insurance companies to ensure that patients are adequately covered for these services.

#### **5.9.4 Nursing Research**

- Collaboration is required between nurse researchers and the clinical nurses to identify areas where more research is needed to ensure adequate implementation of preconception services.
- Nurse researchers also need to assist in the dissemination of the evidence of PCC to encourage its implementation.
- Nurse researchers to assist in the development of innovative strategies and ways of incorporating PCC interventions into the existing maternal and primary health programmes.
- Researches should be done on innovative youth-centred ways of encouraging young people to plan their reproduction, utilising such resources as RLP should be carried out.

#### **5.9.5 Areas for further research**

There is the need for further study in the following areas:

- There is need to explore the patient's knowledge, attitude and practice of preconception care, especially in the context of HIV and AIDS.
- This study can also be replicated nationally to enable the findings to be generalized.
- There is the need to explore the concept using the qualitative research method for in-depth understanding of the subject.
- Further studies can explore all the primary health care workers or all the health workers that are responsible for the provision of PCC.
- In addition, further research should look at the barriers and facilitators to the provision of preconception care, especially in the context of HIV and AIDS.

## **5.10 LIMITATIONS OF THE STUDY**

The major limitation of the present study is that the data was collected using only the questionnaire, which may have limited the responses given by the respondents and may have been subject to personal bias and the respondents' capacity in interpreting the questions.

Another limitation is that the study was conducted in a higher education institution using only primary health care nurses who are students, which may not be generalised to the entire PHC nurses in the district.

## **5.11 SUMMARY OF THE CHAPTER**

The chapter has discussed the findings of the study in line with the existing literature. Based on the findings, recommendations were made for nursing practice, education, management, and research. Areas for further research and limitations of the study have also been highlighted.

## **5.12 CONCLUSIONS**

This study sought to explore and describe the knowledge, attitude and practice of primary health care students regarding preconception care in a selected higher education institute in the eThekweni District. Previous studies discussed have indicated that the practice and implementation of PCC among nurses and other primary health care workers was low. The findings of the present study established that the PHC nurses lacked the implementation of PCC, which was as a consequence of their lack of education and training about PCC. They also demonstrated that their current training was not very useful to them with regards to the provision of PCC interventions.

The results revealed that PHC nurses were knowledgeable about PCC they also were knowledgeable about important advice and screening necessary when rendering PCC they as well possess favourable attitudes towards PCC.

As hypothesised in the Precede / Proceed Model, which was adapted for this study, the predisposing factors, enabling factors and reinforcing factors all needed to be there, before implementation and practice could occur. The three factors were also affected by the demographic characteristics. Practice of PCC was found to be influenced by age and availability of protocol; knowledge was found to be influenced by employment area, age,

availability of protocol and attitude; attitude was associated with employment area, knowledge and practice. An association was also found between training, employment area, study centre and the provision of PCC. The main barrier to the provision of PCC that the study identified was the lack of training and support from staff or the government. It was also seen from this study that adequate promotion and access to policy and guidelines would facilitate PCC.

The findings of the present study supported and added to earlier studies that PHC providers and nurses had a positive attitude towards PCC, but their skills were often inadequate and therefore affected the practice. This study, like former studies on PCC, identified that some demographic factors influenced the nurses' knowledge, attitudes, and practices of PCC. The study also revealed that PCC practice was hindered to a greater degree by barriers in training and governmental support. PCC is an important element in primary health care, so there is need to pay attention to every element that hampering its provision. These findings have implications for nursing education, practice, management and research and it is anticipated that the recommendations made will be implemented to promote the provision of PCC among nurses and other primary health care workers.



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## **ANNEXURES**

### **ANNEXURE 1: RESPONDENTS' INFORMATION DOCUMENT**

#### **UKZN HUMANITIES AND SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE (HSSREC)**

#### **APPLICATION FOR ETHICS APPROVAL**

#### **For research with human respondents**

#### **INFORMED CONSENT RESOURCE TEMPLATE**

#### **Information Sheet and Consent to Participate in Research**

Date:

Dear Nursing Student,

I, Mrs. WC UKOHA, I am a student at the University of KwaZulu-Natal, doing Masters in Maternal and child health. As part of my studies at the University, I am required to conduct a study in my area of interest. My study title is EXPLORING THE KNOWLEDGE, ATTITUDE AND PRACTICES OF PHC STUDENTS REGARDING PRECONCEPTION CARE IN A SELECTED HIGHER EDUCATION INSTITUTION IN ETHEKWINI DISTRICT: A DESCRIPTIVE STUDY.

I am requesting your participation in this study because you meet the criteria of the people who are eligible to participate in the study. The aim and purpose of this study are to explore and describe the knowledge, attitude, and practices of PHC students' regarding preconception care. The study will also determine factors that facilitate or act as barriers to rendering preconception care. The findings of the study may assist policy makers to have evidence-based information that will help to enable you to render this highly important services to your clients. The findings may also help nursing practice by informing professional nurses especially those in the reproductive health facilities to improve on health education and awareness strategies. The study is expected to enroll approximately 163 respondents, from all the selected sites of the study. The study is not funded and will provide no direct benefits to the respondents and there are no incentives for the participation. There are no risks involved in this study thus there is no compensation planned for the respondents involved.

If you agree to participate, you will be provided with a structured questionnaire and requested to complete it upon your voluntary agreement to participate in the study. The researcher will liaise with the facilitator to complete the questionnaire during lunch period so as to not interfere with your studies. Completing the questionnaire will take about 30 minutes of your time. The information you give will be treated with utmost confidentiality. Any personal information will not be disclosed unless required by law. Your names will not appear anywhere in the questionnaire or in the study findings. You are requested not to put your names on the questionnaires provided. There are no expenses involved because the study will be conducted during usual school days.

Please feel free to ask questions you may have so that you are clear about what is expected of you. You are free to participate or not to participate in this study. You are also free to withdraw from the study at any stage without repercussions. There will be no risks attached to your participation. The results of the study will be made available to you on completion of this study.

Thank you for your time and cooperation.

Yours Sincerely

MRS WC UKOHA

Date

In the event of any problems or concerns/questions, you may contact the researcher at (Cell No.0781117955, email address [winifredchinyere@gmail.com](mailto:winifredchinyere@gmail.com) or Makhosi Dube (Supervisor) No. 031 260 1083 email address: [dubeb@ukzn.ac.za](mailto:dubeb@ukzn.ac.za) or the UKZN Humanities & Social Sciences Research Ethics Committee, contact details as follows:

**HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION**  
Research Office, Westville Campus  
Govan Mbeki Building  
Private Bag X 54001  
Durban  
4000  
KwaZulu-Natal, SOUTH AFRICA  
Tel: 27 31 2604557- Fax: 27 31 2604609  
Email: [HSSREC@ukzn.ac.za](mailto:HSSREC@ukzn.ac.za)

This study has been ethically reviewed and approved by the UKZN Humanities and Social Sciences Research Ethics Committee (approval number HSS/0994/017M)

## **ANNEXURE 2: DECLARATION OF CONSENT TO PARTICIPATE IN THE STUDY**

### **CONSENT**

I ----- have been informed about the study entitled “exploring the Knowledge, Attitude and Practices of PHC students regarding preconception care” by WC UKOHA.

The research study including the above information has been described to me orally and I understand the purpose of the study. If I agree to participate, I will be given this document to sign and the participant information sheet, which is a written summary of the research, will also be given to me.

I have been given an opportunity to answer questions about the study and have had answers to my satisfaction.

I declare that my participation in this study is entirely voluntary and that I may withdraw at any time without affecting any of the benefits that I usually am entitled to.

I have been informed about any available compensation or medical treatment if an injury occurs to me because of study-related procedures.

If I have any further questions/concerns or queries related to the study I understand that I may contact the researcher at (C) 0781117955/email address [winifredchinyere@gmail.com](mailto:winifredchinyere@gmail.com) or the project supervisor at 031 260 1083, Email: [dubeb@ukzn.ac.za](mailto:dubeb@ukzn.ac.za)

If I have any questions or concerns about my rights as a study participant, or if I am concerned about an aspect of the study or the researchers then I may contact:

**HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION**  
Research Office, Westville Campus  
Govan Mbeki Building  
Private Bag X 54001  
Durban  
4000  
KwaZulu-Natal, SOUTH AFRICA  
Tel: 27 31 2604557 - Fax: 27 31 2604609  
Email: [HSSREC@ukzn.ac.za](mailto:HSSREC@ukzn.ac.za)

**Signature of Participant**

**Date**

### ANNEXURE 3: QUESTIONNAIRE

These questionnaires seek to explore and describe the knowledge, attitude, and practices of PHC students regarding preconception care in a selected institution in eThekweni district. The study will also determine facilitators to the rendering of preconception care as well as barriers faced by PHC nurses in their bid to render preconception care services.

Your responses to this questionnaire will provide the needed data for the investigation. It is solely for academic purposes and you are assured of anonymity and confidentiality. The questionnaires are self-administered and may require 25-30 minutes of your time. Your frank and candid responses are welcome. However, you are free to partake or decline without any recrimination.

Date

Questionnaire No

#### **INSTRUCTIONS: KNOWLEDGE, ATTITUDE, AND PRACTICES OF PHC NURSING STUDENTS REGARDING PRECONCEPTION CARE (Items: 52)**

In answering this questionnaire, please think about the service and your personal experience in learning about or rendering the services. The questions relate to general issues about your background information and four main themes solicit your levels of knowledge, attitude, practices, facilitators, and barriers to the provision of preconception care services. Your responses are strictly confidential and will not be seen by teaching staff. Kindly complete all sections A to E.

#### **SECTION A: DEMOGRAPHIC DATA**

<b>N o</b>	<b>DEMOGRAPHIC CHARACTERISTIC</b>	<b>RESPONSES</b>			
<b>1</b>	Age (years)	20-30	31-40	41-50	51+
<b>2</b>	Gender	Male	Female	Other	
<b>3</b>	Race	Black	White	Indian	Coloured
<b>4</b>	Religion	Christian	Islam	Hindu	Traditiona l
<b>5</b>	Marital status	Single	Married	Divorced	Separated

<b>6</b>	How many years have you practiced as a PHC nurse?	1-5	6-10	11-20	21+
<b>7</b>	Where are you employed?	Public Clinic	Municipal Clinic	NGO	Others
<b>8</b>	In which Centre are you studying?	Durban	Pietermaritzburg	Empangeni	Others

## SECTION B: PRACTICES OF PRECONCEPTION CARE

No	ITEMS	Yes	No
<b>9</b>	Have you ever rendered preconception care services/ counselling to anyone before?		
<b>10</b>	Does your practice have an accessible written protocol regarding preconception care?		
<b>11</b>	In your practice is preconception services provided by any team member?		

**12.** Who provides PCC in your practice?

General practitioner	PHC nurse	Midwife	School nurse	Others (please state)
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**13.** In what setting is this care/ services offered?

Family planning clinic	Child health clinic	School clinic	Youth-friendly clinic	Others (please state)
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**14.** What type of preconception care/ services are offered

HIV testing and management	Chronic condition control	Genetic counselling	Fertility counselling	Weight control	Others (please state)
----------------------------	---------------------------	---------------------	-----------------------	----------------	-----------------------

**15.** How many times in the last month have you provided preconception care?

**Please write a figure in the box.**



## SECTION C: KNOWLEDGE

To what extent do you agree with the following statements?

SD= strongly disagree, D= disagree, U= uncertain, A=agree, SA= strongly agree

KNOWLEDGE ABOUT PCC						
No.	Items	SD	D	U	A	SA
16.	PCC can lead to better pregnancy outcome					
17.	The risk profile of my patient will not change after PCC					
18.	PCC should only be offered to women with high risks					
19.	PCC can reduce the incidences of unwanted and unplanned pregnancy					
20.	PCC can help reduce maternal and child mortality rate					
21.	PCC is for all women of child bearing age					
22.	There is no PCC policy in South Africa					
23.	PCC can reduce the incidences of PCR positive					
24.	PCC can reduce the chances of acquiring HIV among serodiscordant couple					
25.	There is little evidence base for preconception care					

26. I want to find out how important you feel the following services are for people planning a pregnancy.

Advice on		Of no important	Little Important	Uncertain	Important	Very Important
26.1	Smoking					
26.2	Drug use					
26.3	Weight control					
26.4	Exercise					
26.5	Alcohol					
26.6	Diet					
26.7	Maternity care					

<b>26.8</b>	Genetic counselling					
<b>26.9</b>	Inherited disorders					
<b>26.10</b>	Chronic diseases					
<b>26.11</b>	Folic acid					
<b>26.12</b>	Occupational hazards					
<b>27. Screening for</b>						
<b>27.1</b>	Rubella					
<b>27.2</b>	HIV					
<b>27.3</b>	Cervical cytology					
<b>27.4</b>	Hepatitis					
<b>27.5</b>	Genital infections					
<b>27.6</b>	Nutritional status					

## **SECTION D: ATTITUDE TOWARDS PRECONCEPTION CARE**

**To what extent do you agree with the following statements?**

No	ITEMS	SD	D	U	A	SA
28.	PCC is an important health issue for women of child bearing age					
29.	A dedicated clinic for preconception care is a luxury service					
30.	A hospital setting is the best place to provide preconception care					
31.	In my practice population, planning for pregnancy often does not happen					
32.	Preconception care is a high priority in my workload					
33.	There is not enough time to provide preconception care					

34.	As a PHC nurse, I do not have enough skills to offer preconception care					
35.	PHC nurses are not the best people to offer preconception care					
36.	I prefer to deal with risk factors before pregnancy rather than in pregnancy					
37.	Initiating the talk about pregnancy wish is uncomfortable					
38.	Preconception care without women asking for it is objectionable					
39.	With preconception care, I can do something extra for my patients					

#### SECTION E: PERCEIVED FACILITATORS TO PRECONCEPTION CARE

40. Have you received any training involving preconception care (within a general or specific course)?

Yes		No	
-----	--	----	--

41. How useful is your current training for preconception care? (Please tick the box)

Very useful		Quite useful		Neither		Of little use		Not at all useful	
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What do you think are the facilitators of PCC?

SD= strongly disagree, D= disagree, U= uncertain, A=agree, SA= strongly agree

No	Items	SD	D	U	A	SA
42.	Evidence of effectiveness					
43.	Background knowledge and training					
44.	More staff/ time					
45.	More promotion of PCC					
46.	Adequate reimbursement					
47.	Adequate resources for PCC					
48.	PCC guidelines, policy or reminder					

## **PERCEIVED BARRIERS TO PRECONCEPTION CARE**

What do you think are the barriers to PCC?

		<b>SD</b>	<b>D</b>	<b>U</b>	<b>A</b>	<b>SA</b>
49.	Lack of support from staff/ government					
50.	Uncooperative patient					
51.	Lack of training/ skills					
52.	Patients not demanding PCC					

**THANK YOU**

## ANNEXURE 4: LETTER FOR GATEKEEPER PERMISSION



No 23 Kensington Gardens  
Umbilo  
Durban  
7<sup>th</sup> May 2017.

The Registrar  
University of KwaZulu-Natal  
Westville Campus

Dear Sir/ Madam

### REQUEST FOR PERMISSION TO CONDUCT A STUDY IN YOUR INSTITUTION

I, Winifred Ukoha, student number 213572775, masters of nursing student in maternal and child health, wish to ask for your permission to conduct a study in your institution using the primary health care nursing students in Howard campus as part of the requirement for the completion of masters in maternal and child health. The title of my study is exploring and describing the knowledge, attitude and practices of Primary Health Care nursing students regarding Preconception care in a selected institution in Ethekwini District.

The purpose of the study is to examine and describe the knowledge, attitude and practices of Primary Health Care nursing students regarding Preconception care. The findings of the study may assist policy makers and other stakeholders in making an informed decision regarding the rendering of preconception care services among health care workers. The results of the study will be made available to the University on the completion of this study.

Looking forward to hearing from you.

Thanks for the anticipated cooperation.

Yours Sincerely  
Winifred Ukoha

**School of Nursing and Public Health**  
**Howard College Campus**  
Postal Address: Private Bag X54001, Durban, 4000, South Africa  
Telephone: +27 (0) 2602499 Facsimile: +27 (0) 31 2601543 Website: [www.ukzn.ac.za](http://www.ukzn.ac.za)



Founding Campuses: ■ Edgewood ■ Howard College ■ Medical School ■ Pietermaritzburg ■ Westville

**INSPIRING GREATNESS**

## ANNEXURE 5: GATEKEEPERS PERMISSION



9 May 2017

Winifred Ukoha Chinyere (SN 213572775)  
School of Nursing and Public Health  
College of Health Sciences  
Howard College Campus  
UKZN  
Email: [winifredchinyere@gmail.com](mailto:winifredchinyere@gmail.com)

Dear Winifred

### RE: PERMISSION TO CONDUCT RESEARCH

Gatekeeper's permission is hereby granted for you to conduct research at the University of KwaZulu-Natal (UKZN), towards your postgraduate degree, provided Ethical clearance has been obtained. We note the title of your research project is:

*"Exploring and describing the knowledge, attitude and practices of Primary Health Care nursing students regarding Preconception care in a selected institution in Ethekwini District".*

It is noted that you will be constituting your sample by handing out questionnaires to Primary Health Care nursing students on the Howard College campus.

Please ensure that the following appears on your notice/questionnaire:

- Ethical clearance number;
- Research title and details of the research, the researcher and the supervisor;
- Consent form is attached to the notice/questionnaire and to be signed by user before he/she fills in questionnaire;
- gatekeepers approval by the Registrar.

You are not authorized to contact staff and students using 'Microsoft Outlook' address book. Data collected must be treated with due confidentiality and anonymity.

Yours sincerely

**MR SS MOKOENA**  
**REGISTRAR**

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#### Office of the Registrar

Postal Address: Private Bag X54001, Durban, South Africa

Telephone: +27 (0) 31 260 8005/2206 Facsimile: +27 (0) 31 260 7824/2204 Email: [registrar@ukzn.ac.za](mailto:registrar@ukzn.ac.za)

Website: [www.ukzn.ac.za](http://www.ukzn.ac.za)



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## ANNEXURE 6: ETHICAL CLEARANCE FROM BIOMEDICAL ETHICS COMMITTEE



11 July 2017

Mrs Winifred Chinyere Ukoha (213572775)  
School of Nursing & Public Health  
Howard College Campus

Dear Mrs Ukoha,

Protocol reference number: HSS/0994/017M

Project title: Exploring the perceptions of primary health care nursing students regarding preconception care in a selected higher education institution in Ethekwini district: A descriptive study

### Approval Notification – Expedited Application

In response to your application received on 29 June 2017, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol has been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number.

**PLEASE NOTE:** Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

  
Dr Shenuka Singh (Chair)

/ms

Cc Supervisor: Ms Makhosi Dube  
Cc Academic Leader Research: Professor B Sartorius  
Cc School Administrator: Ms Caroline Dhanraj

### Humanities & Social Sciences Research Ethics Committee

Dr Shenuka Singh (Chair)

Westville Campus, Govan Mbeki Building

Postal Address: Private Bag X54001, Durban 4000

Telephone: +27 (0) 31 260 3687/9350/4567 Facsimile: +27 (0) 31 260 4609 Email: [zimhapi@ukzn.ac.za](mailto:zimhapi@ukzn.ac.za) / [snymann@ukzn.ac.za](mailto:snymann@ukzn.ac.za) / [mohunna@ukzn.ac.za](mailto:mohunna@ukzn.ac.za)

Website: [www.ukzn.ac.za](http://www.ukzn.ac.za)



Founding Campuses:

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## ANNEXURE 7: LETTER REQUESTING SITE PERMISSION



School of Nursing and Public  
Health  
5<sup>th</sup> Floor, Desmond Clarence  
Building  
University of KwaZulu-Natal  
22 August 2017

Dean and Head of School  
Nursing and Public Health  
University of KwaZulu-Natal  
Howard College Campus  
Durban  
4041

Dear Professor Mchunu

REQUESTING FOR ASSISTANCE AND SUPPORT TO COLLECT DATA FROM PHC  
STUDENTS

I, Winifred Ukoha, student number 213572775, master of nursing student, wish to ask for your permission to conduct a study in your institution using the Primary health care nursing student as part of the requirement for completion of masters in maternal and child health.

The title of my study is exploring PHC nursing student's perceptions regarding preconception care in a selected higher education institution in eThekwin district: a descriptive study

The purpose of the study is to examine and describe PHC students' knowledge, attitude and practice of preconception care. I am requesting your assistance and support to collect data from the Durban, Pietermaritzburg and Empangeni centre of the decentralised PHC program as they are my sample for this study. The findings of the study may assist policy makers and educators to have evidence based information that will help inform them on how to incorporate preconception services into primary health care services, so that women will conceive in optimum health for improved pregnancy outcome. The results of the study will be made available to the University on completion.

Looking forward to hearing from you.  
Thanks for the anticipated cooperation.

Yours Faithfully  
Winifred Ukoha  
Project Supervisor: Makhosi Dube ([dubeb@ukzn.ac.za](mailto:dubeb@ukzn.ac.za)) 0312601083



## ANNEXURE 8: SITE PERMISSION



Date: 12 September 2017

Dear Ms. Winifred Ukoha

**Re: Permission to collect data- Ms. Winifred Ukoha (213572775) Full Research Masters**

We are pleased to inform you that permission is granted for you to collect data for your research study titled **"Exploring the perceptions of the primary health care nursing students regarding preconception care in selected higher education institution in Ethekekwini district: A descriptive study."**

Our understanding is that your research study involves collecting data from Primary Health Care Nursing students. Data collection will not occur during lecture times, but will be coordinated with assistance of the level coordinator.

Wishing you all the best with your studies

Yours sincerely

Professor GG Mchunu

Academic Leader: Nursing

---

School of Nursing and Public Health

Postal Address: University of KwaZulu-Natal, School of Nursing and Public Health, Howard Campus, Private Bag X 54001, Durban, 4000

Telephone: +27 (0) 31 2602499 Facsimile: +27 (0) 31 2601543 Website: [www.ukzn.ac.za](http://www.ukzn.ac.za)



Partnering Campus

Edgewood

Howard College

Medlces' School

Pietermaritzburg

Westville

## ANNEXURE 9: EDITOR'S LETTER



Pauline Fogg  
54 Grundel Road  
Carrington Heights  
Durban  
4001  
074 782 5234

12 December 2017

### *Letter of Editing*

This report serves to state that the dissertation submitted by Winifred Chinyere Ukoha, in fulfilment of the requirements the degree Coursework Masters of Nursing (Maternal and Child Health) has been edited.

The dissertation was edited for errors in syntax, grammar, punctuation and the referencing system used.

The edit will be regarded as complete once the necessary changes have been effected and all of the comments addressed.

Thank-you for your business.

A handwritten signature in grey ink that reads "P. Fogg".

Pauline Fogg